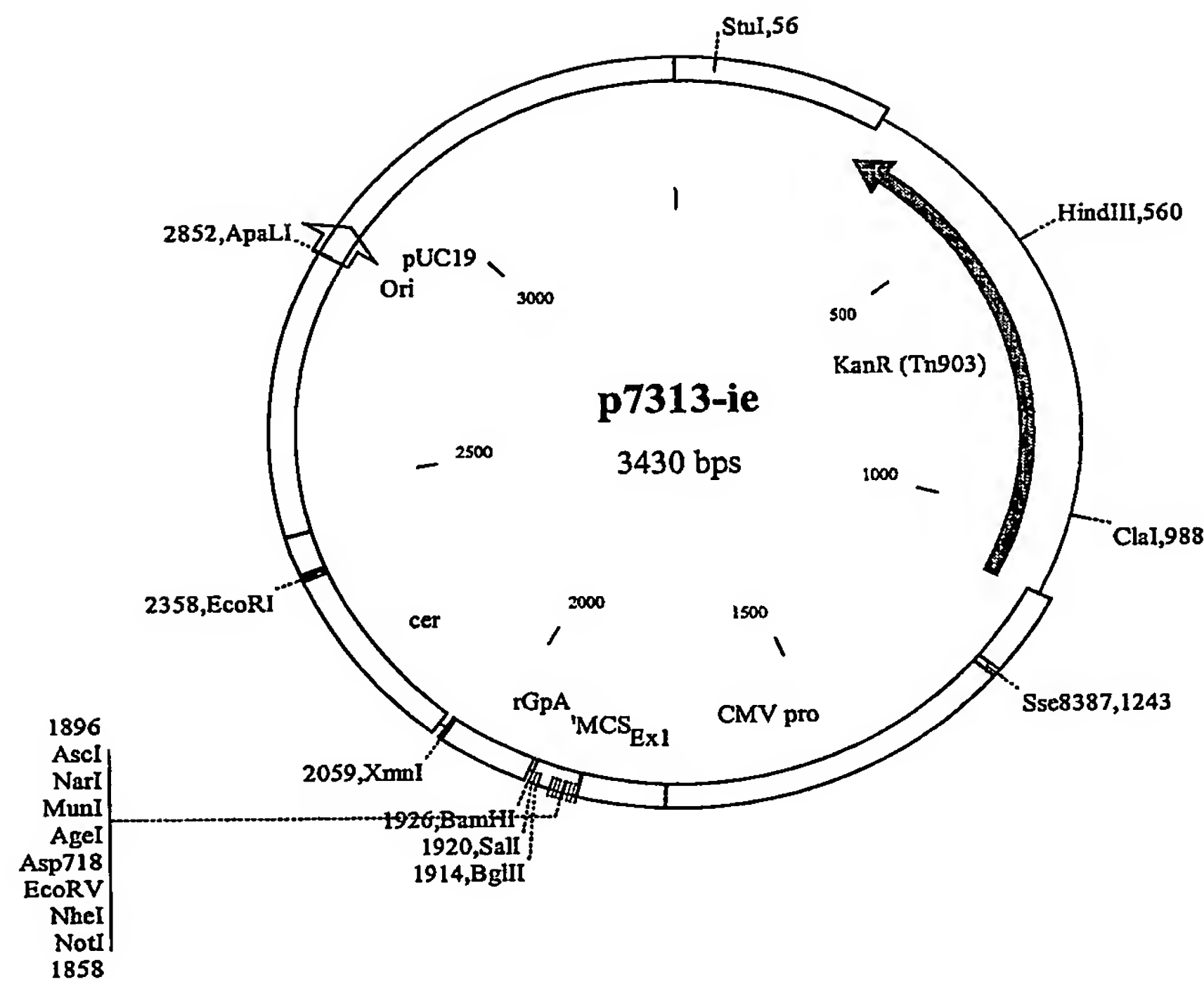
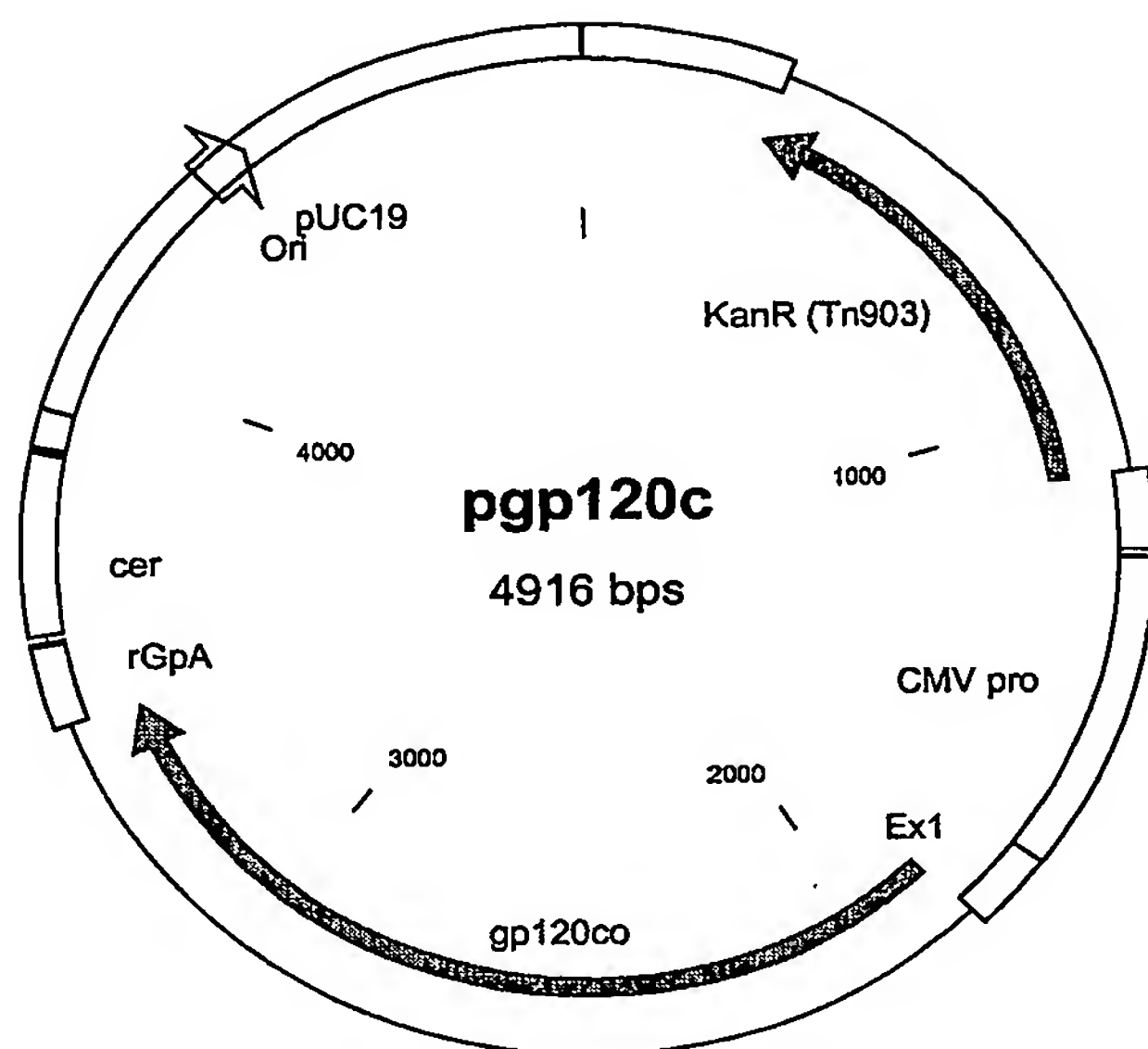


Figure 1



**Figure 2**

Map of pgp120c:



The amino acid sequence of the W61D gp120 is below. The signal sequence is underlined and bold, up to the predicted cleavage site between amino acids 29 and 30. This is the sequence removed in dsGP120 (pRix12 etc).

**MKVKETRKNYQHLWRWGTMLLGMLMICSAAEQLWVTVYYGVPVWKEATTTLFCASDAKAYDTEVHNVWATH**  
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 SNGWTGEIRKGEIKNCSFNITTSIRDKVQKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQA  
 CPKVSFEPPIPIHYCAPAGFAILKCNNKTFDGGKGLCTNVSTVQCTHGIRPVVSTQLLNGSLAEEEVVIRSD  
 NFMDNTKTIIVQLNESVAINCTRPNNNTRKGIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVI  
 KLREHFGNKTIFKNQSSGGDPEIVRHSFNCGGEFFYCDTTQLFNSTWNGTEGNNTTEGNSTITLPCRICKQII  
 NMWQEVGKAMYAPPIGGQIRCSSNITGLLLTRDGGTEGNNGTENETEIFRPGGGDMRDNRSELYKYKVVKV  
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The codon optimised DNA sequence for the W61D gp120 gene is:

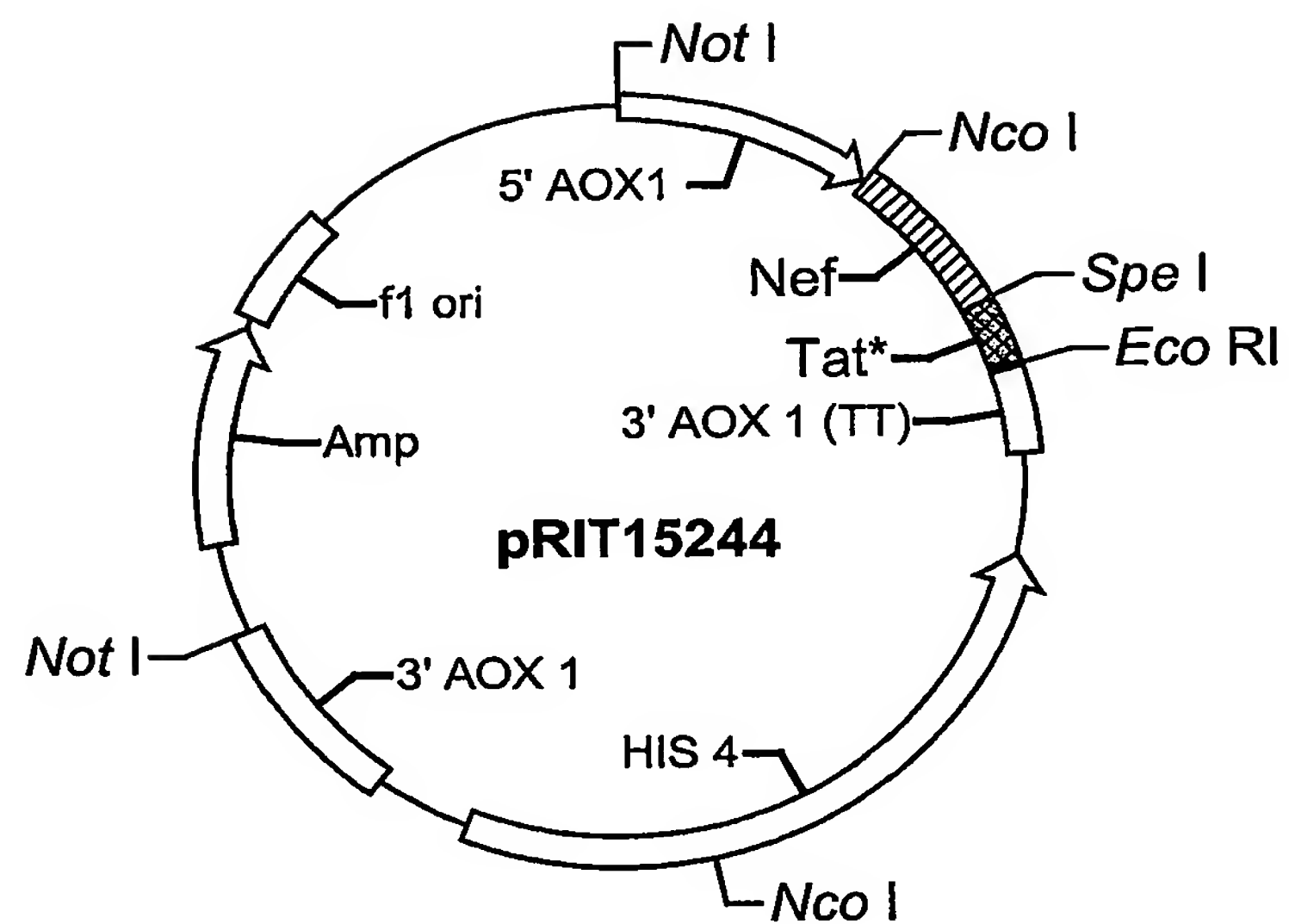
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 CGACCACCCTCTTCTGCGCGAGCGACGCCAAGGCCTACGACACGGAAGTGCATAACGTGTGGGCGACGCAT  
 GCTTGGCGTGCTTACGGACCCCAACCCCAAGGAGGTGGTGCTGGGAAACGTGACCGAGTACTTCAACATGTG  
 GAAGAATAACATGGTGGATCAGATGCACGAGGACATCATCTCTCTGTGGGACCAGTCCCTGAAGCCCTGCG  
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 CCACCACCAAGAACAAGACGACGCGTAATTTCACTGCAACAGCAGCGTCATGACGCGAGGCC  
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**Figure 2 continued**

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TAACAACAACACCCGTAAGGGCATCCACATCGGGCCTGGACGGGCCTTCTATGCCGCCCCGCAAGATCATCG  
GCGACATCCGGCAGGCCCCATTGCAACCTCTCCCGCGCCAGTGGAATAACACCCTGAAGCAGATCGTGATC  
AAGCTGAGAGAGCACTTTGGAAACAAGACCATCAAGTTCAATCAGAGTTCTGGCGGAGACCCCGAGATCGT  
GCGGCACTCCTTCAACTGCGGGGGCGAGTTCTTCTACTGCGATACGACACAGCTCTTCAACTCCACCTGGA  
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CATCACCGGCCTGCTGCTCACCAGAGACGGGGGCACCGAGGGCAACGGCACGGAGAACGAGACGGAGATCT  
TCAGGCCCCGGCGGCGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTG  
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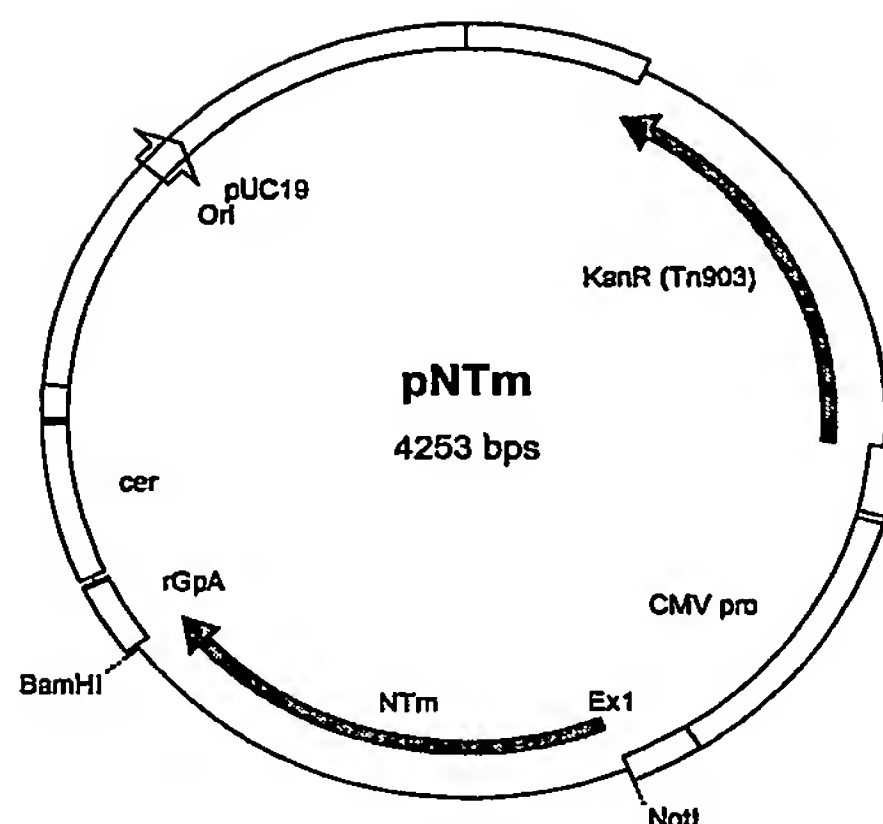
**Figure 3**

Map of pRix15244:



**Figure 4**

Plasmid pNTm:



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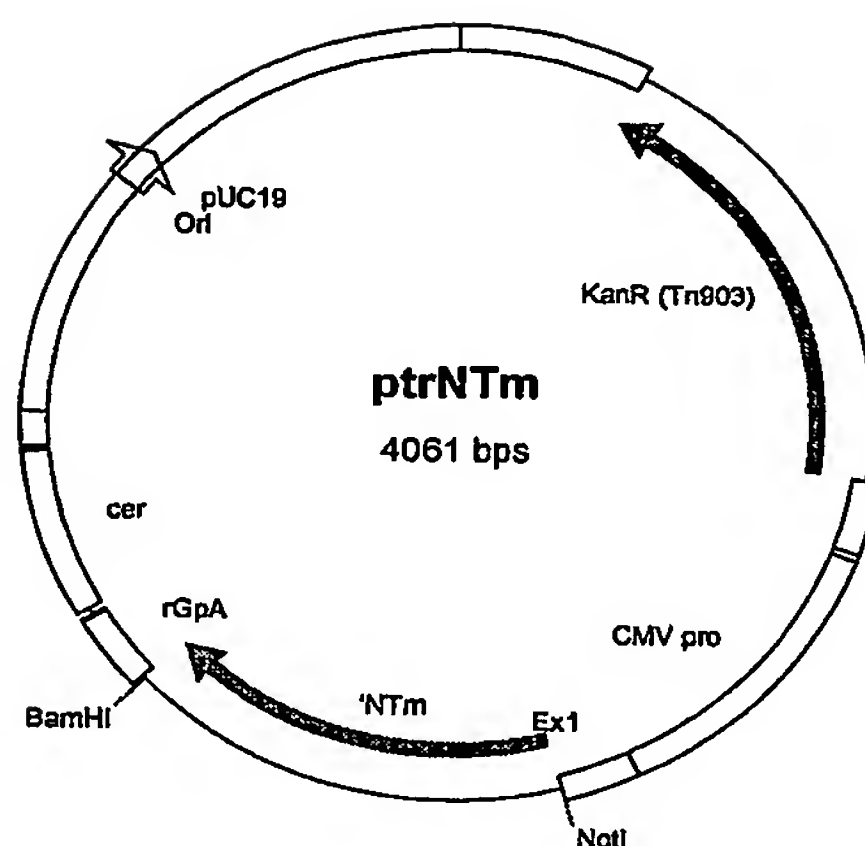
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Amino acid sequence of antigen:

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 PPGVRYPLTFGWICYKLVPVEPDKVEEANKGENTSLHPVSLHGMDDPEREVLEWRFDLSRLAFH  
 HVARELHPEYFKNCTSEPVDPRLEPWKHPGSQPKTACTNCYCKKCCFHCQVCFITAAALGISYGRK  
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**Figure 5**

Plasmid ptrNTm:



Sequence of insert:

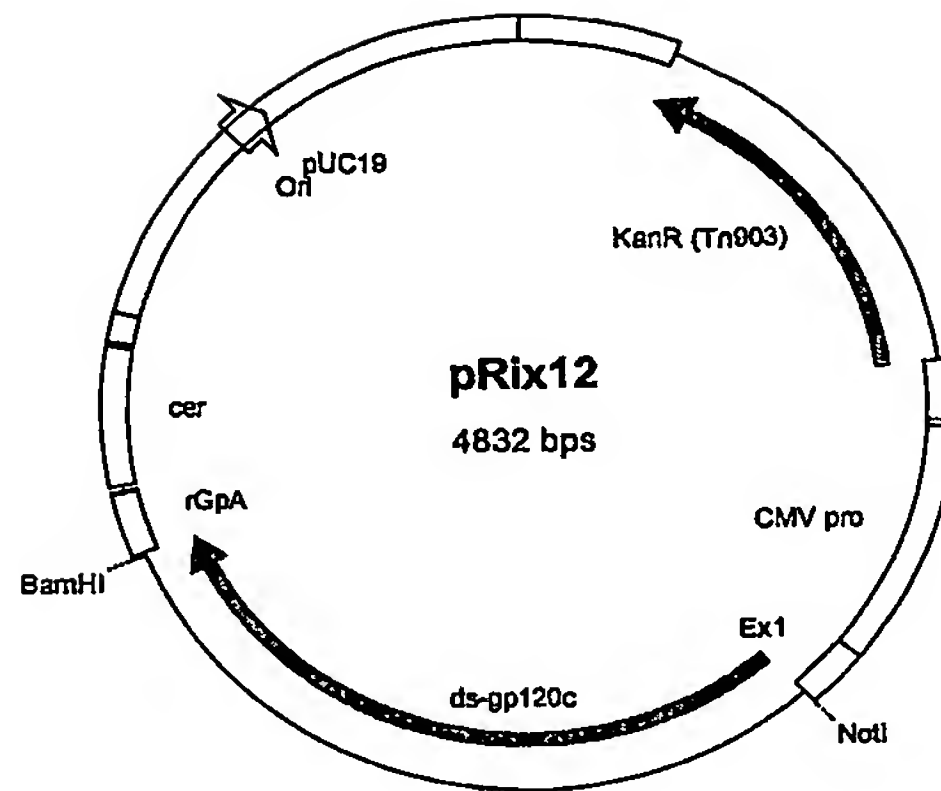
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 CAATTGCTATTGTAAAAAGTGTTGCTTTTCATTGCCAAGTTTGTTTCATAACAGCTGCCTTAGGCATCTCCT  
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 AAGCAACCCACCTCCCAATCCAAAGGGGAGCCGACAGGCCCGAAGGAATAA [SEQ ID NO: 53]

Amino acid sequence of antigen:

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 PLTFGWICYKLVPVEPDKVEEANKGENTSLHPVSLHGMDPEREVLEWRFD SRLAFHHVARELHPEYFKNC  
 TSEPVDPRLEPWKHPGSQPKTACTNCYCKKCCFHCQVCFITAALGISYGRKKRRQRRRPPQGSQTHQVSLS  
 KQPTSQSKGEPTGPKE [SEQ ID NO: 54]

**Figure 6**

Plasmid pRix12:



Sequence of insert:

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 TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA  
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 AACTGCGGGGGCGAGTTCTTCTACTGCGATACGACACAGCTCTTCAACTCCACCTGGAACGGCACCGAGGG  
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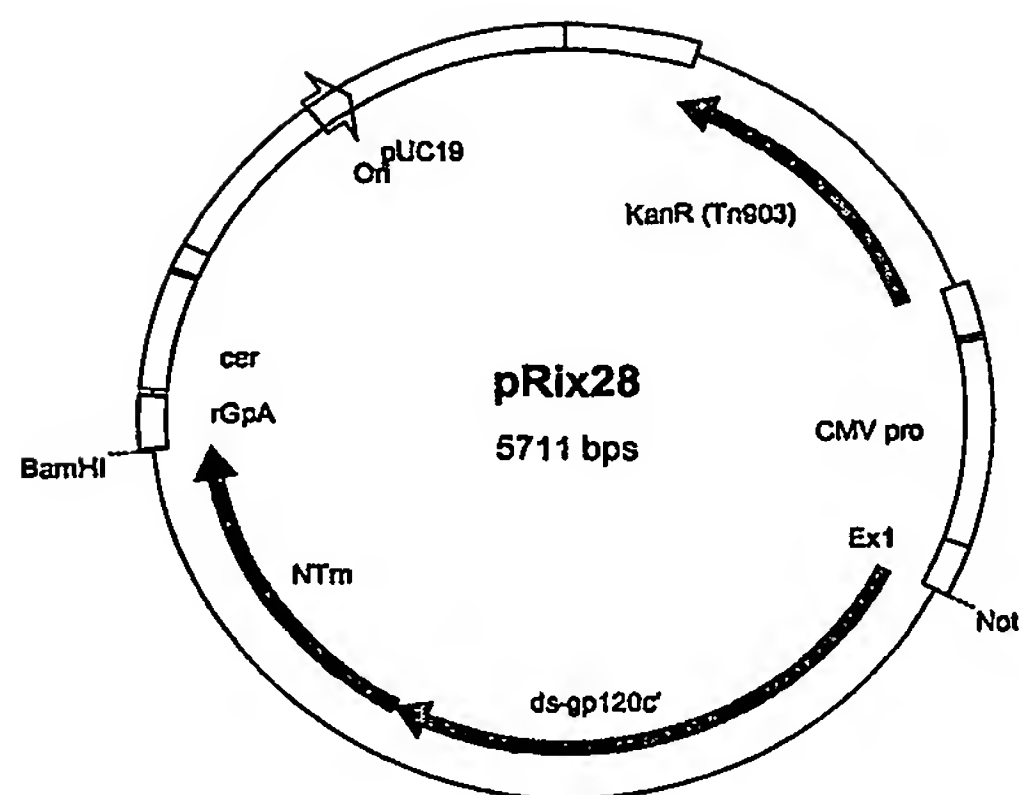
Amino acid sequence of antigen:

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 QKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPKVSFEPPIHYCAPAGFAILKCNKNT  
 FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAEDEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT  
 RKGIIHIGPGRFYAARKIIGDIRQAHCNLSRAQWNTLQIVIKLREHFGNKTIFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTEGNSTITLPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGTEGNGTENETEIFRPGGDMRDNRSELYKYKVVKVEPLGVAPTRAKRRVVQR [SEQ ID  
 NO: 56]



Figure 7

Plasmid pRix28:



Sequence of insert:

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**Figure 7 continued**

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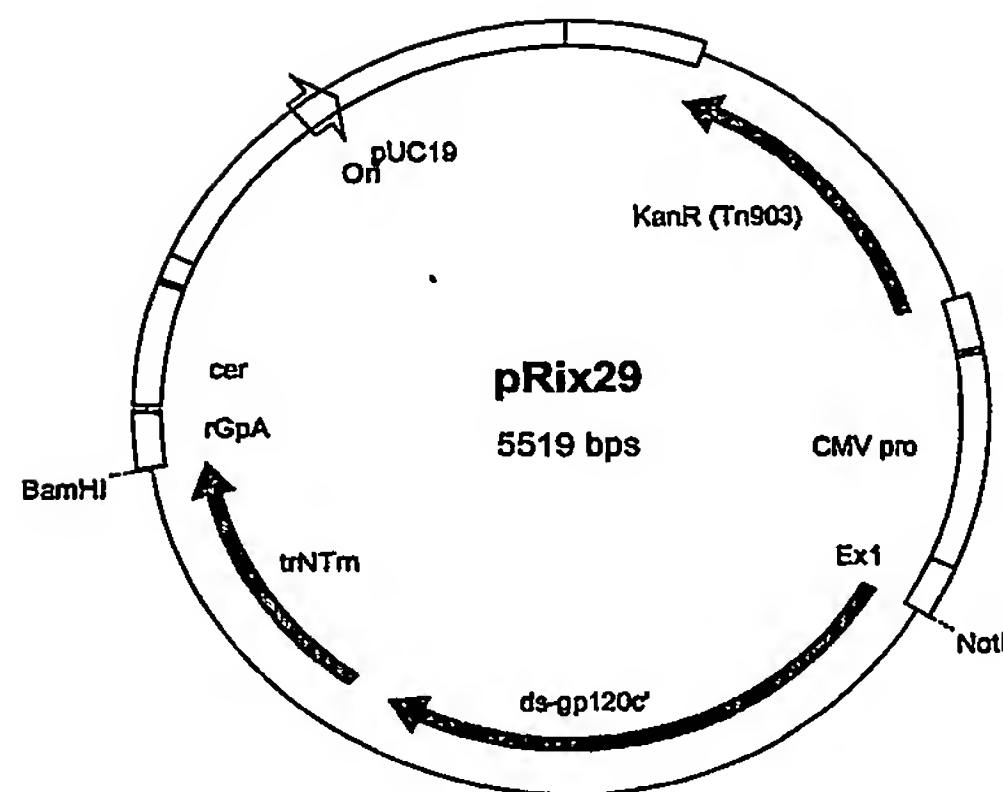
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[SEQ ID NO: 58]

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TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA  
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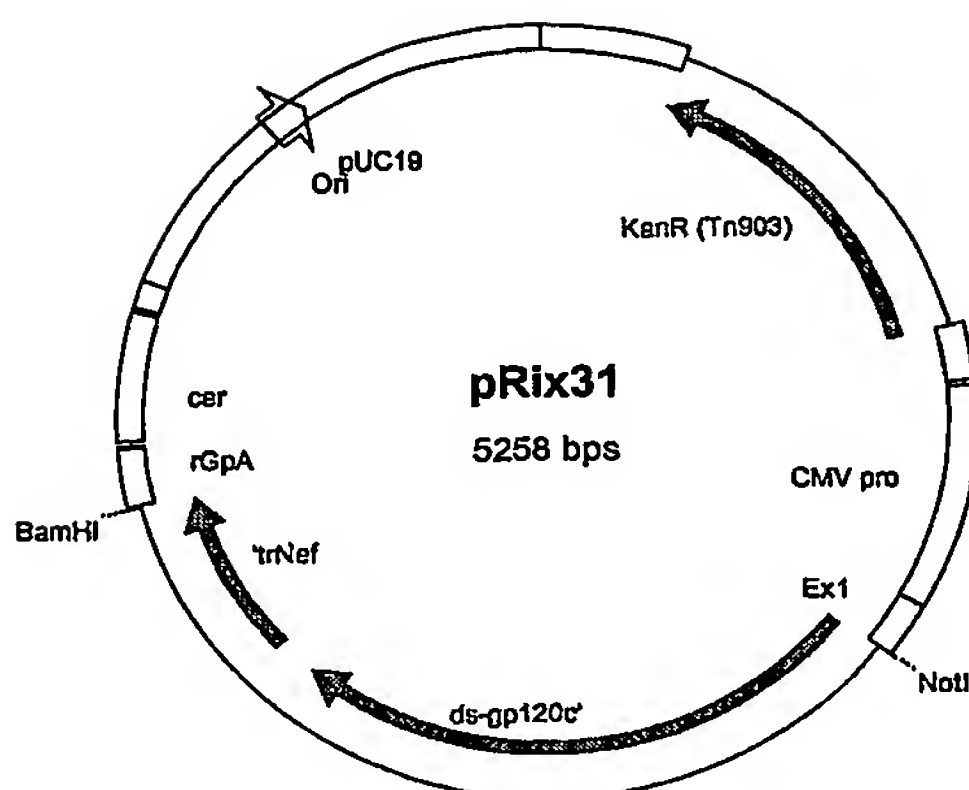
**Figure 8 continued**

Amino acid sequence of antigen:

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FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAEDEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNNT  
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**Figure 9**

Plasmid pRix31:



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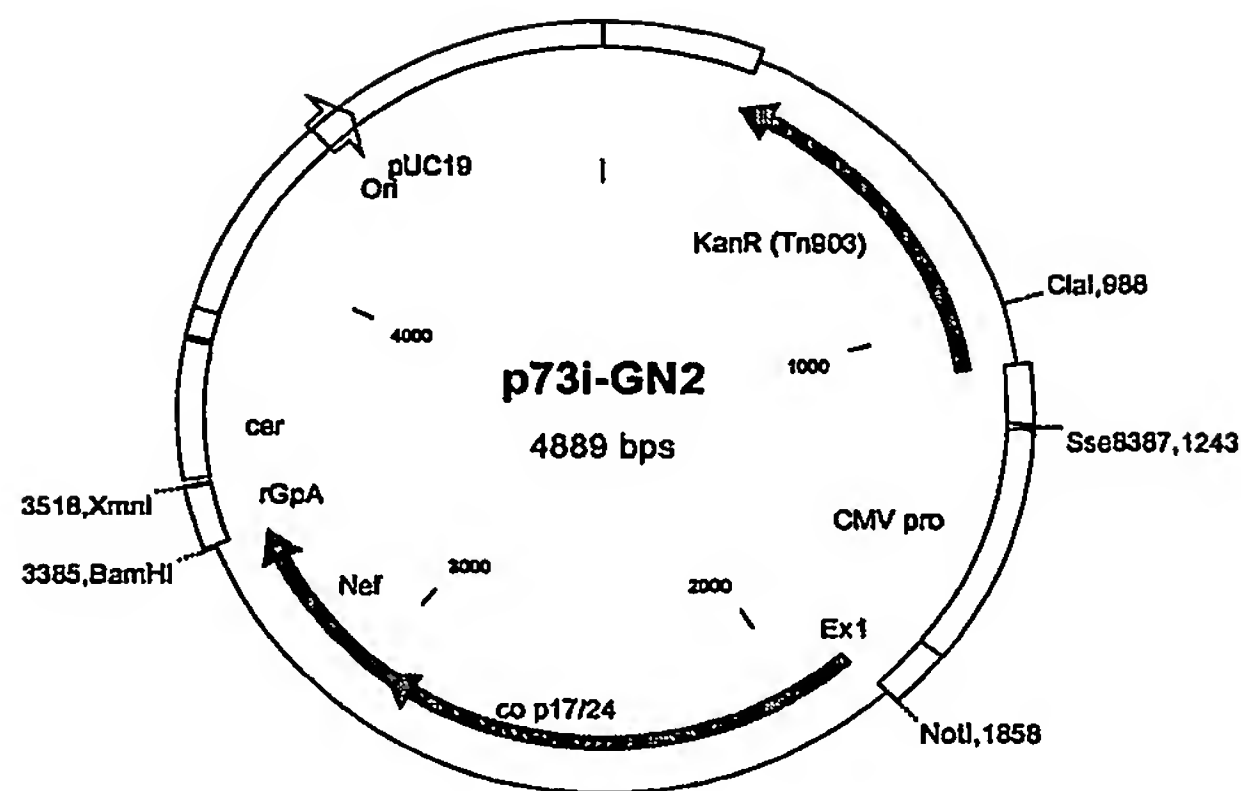
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 AGGTGGGAAAGGCCATGTATGCCCCCCCCATCGGGGGCCAGATCCGCTGCTCCTCCAACATCACCGGCCTG  
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 CGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTGGAGCCGCTCGGCG  
 TGGCCCCCACC CGGGCCAAGCGCCGCGTCTGTGACAGAGAAATGGTGGGTTTTCCAGTCACACCTCAGGTACCT  
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Amino acid sequence of antigen:

**Figure 9 continued**

MAEQLWVTVYYGVPVWKEATTTLEFCASDAKAYDTEVHNVWATHACVPTDPNPQEVVLGNVTEYFNMWKNNM  
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[SEQ ID NO: 62]



**Figure 10**

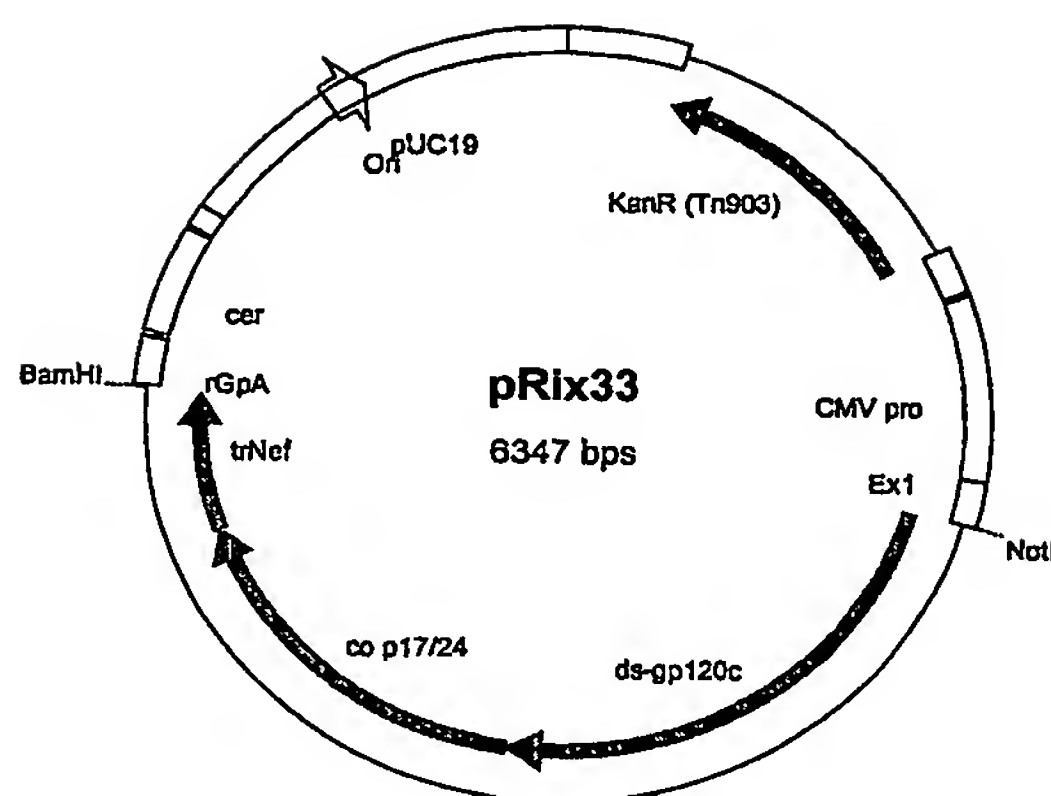
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 TAAGGTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGTTACACCCTGTGAGCCTGCATGGGATGGATG  
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**Figure 11**

Plasmid pRix33:



Sequence of insert:

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Figure 11 continued

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[SEQ ID NO: 64]

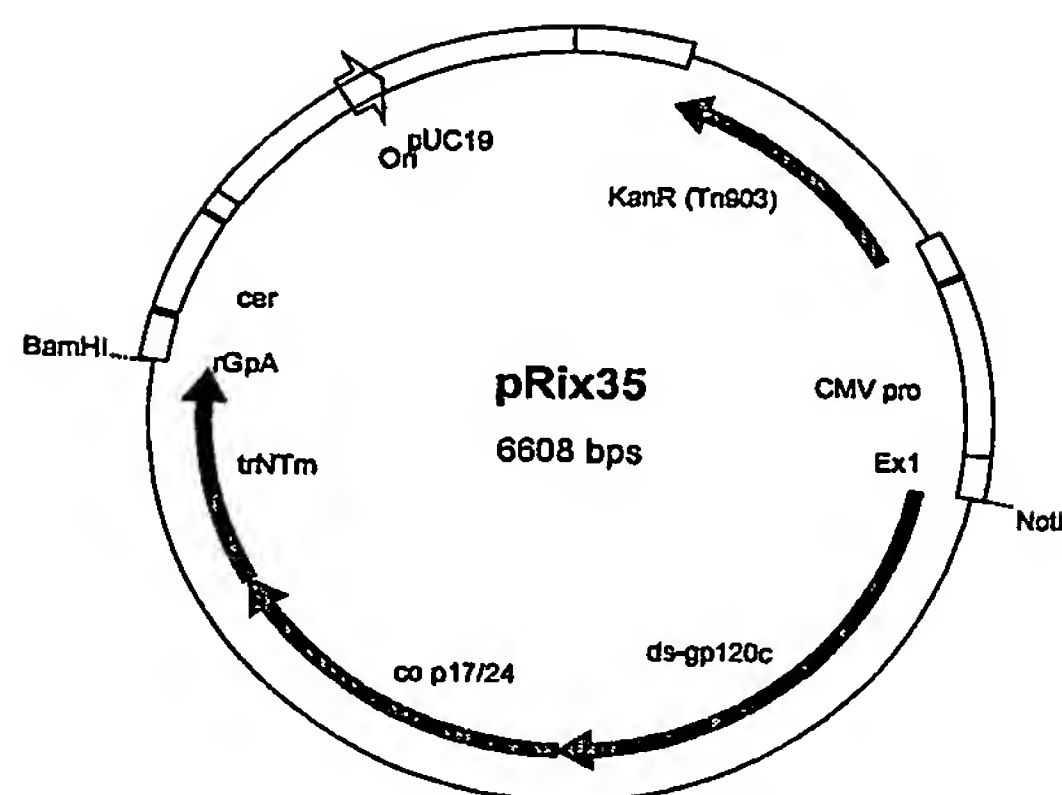
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[SEQ ID NO: 65]

**Figure 12**

Plasmid pRix35:



Sequence of insert

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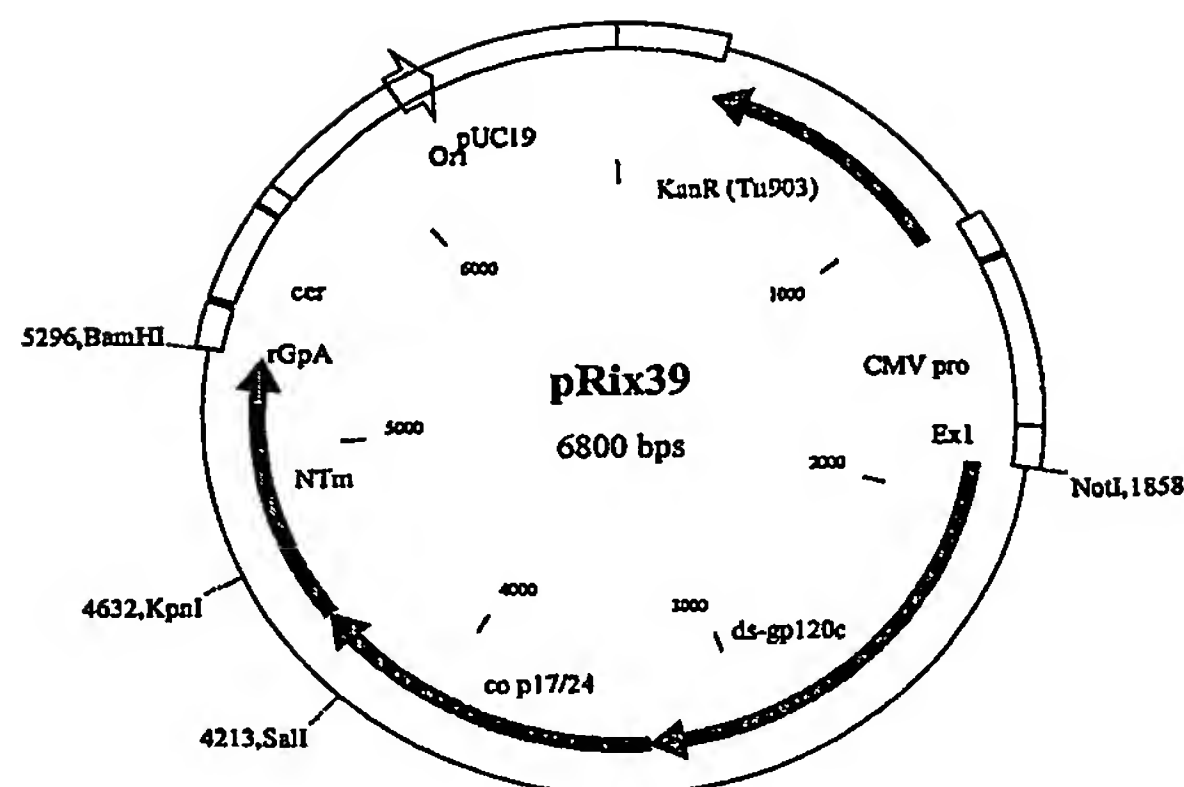
Figure 12 continued

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## Amino acid sequence of antigen:

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Figure 13



Sequence of insert:

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Figure 13 continued

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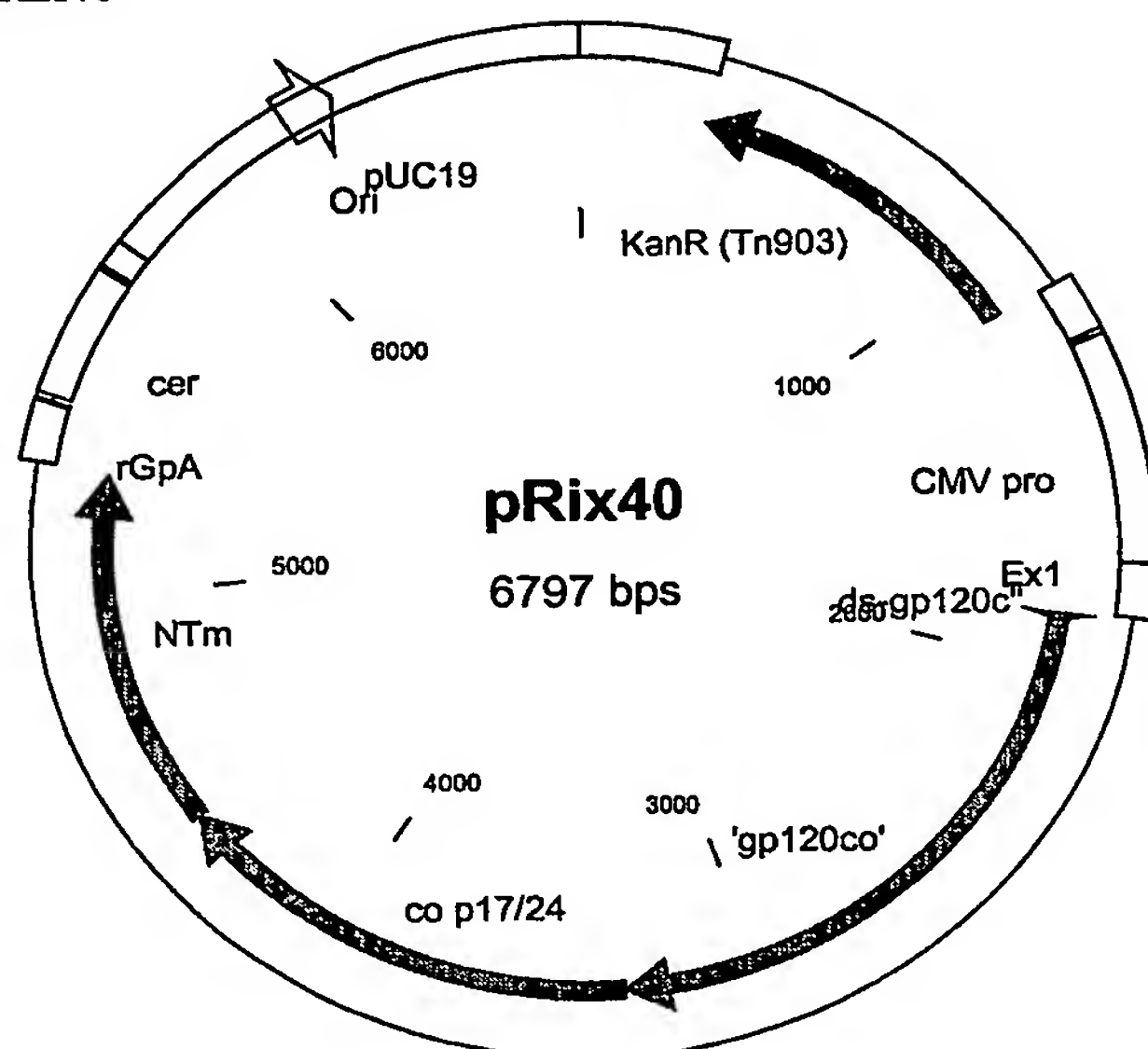
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 NCGGEFFYCDTTQLFNSTWNGTEGNNTEGNSTITLPCRIKQIINMWQEVGKAMYAPPPIGGQIRCSSNITGL  
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 KWSKSSVVGWPTVRERMRAEPAADGVGAASRDLEKHGAITSNTAATNAACAWLEAQEEEEVGFPVTPQV  
 PLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDWLYHTQGYFPDWQNYTPGPGVRYPLTFGWCYKL  
 VPVEPKVVEEANKGENTSLHHPVSLHGMDPEREVLEWRFD SRLAFHHVARELHPEYFKNCTSEPVDPRLE  
 PWKHPGSQPKTACTNCYCKKCCFHCQVCFITAALGISYGRKKRRRQRRRPPQGSQTHQVSLSKQPTSQSKGE  
 PTGPKE [SEQ ID NO: 69]



### Figure 14

pRix40



### DNA sequence of insert

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**Figure 14 continued**

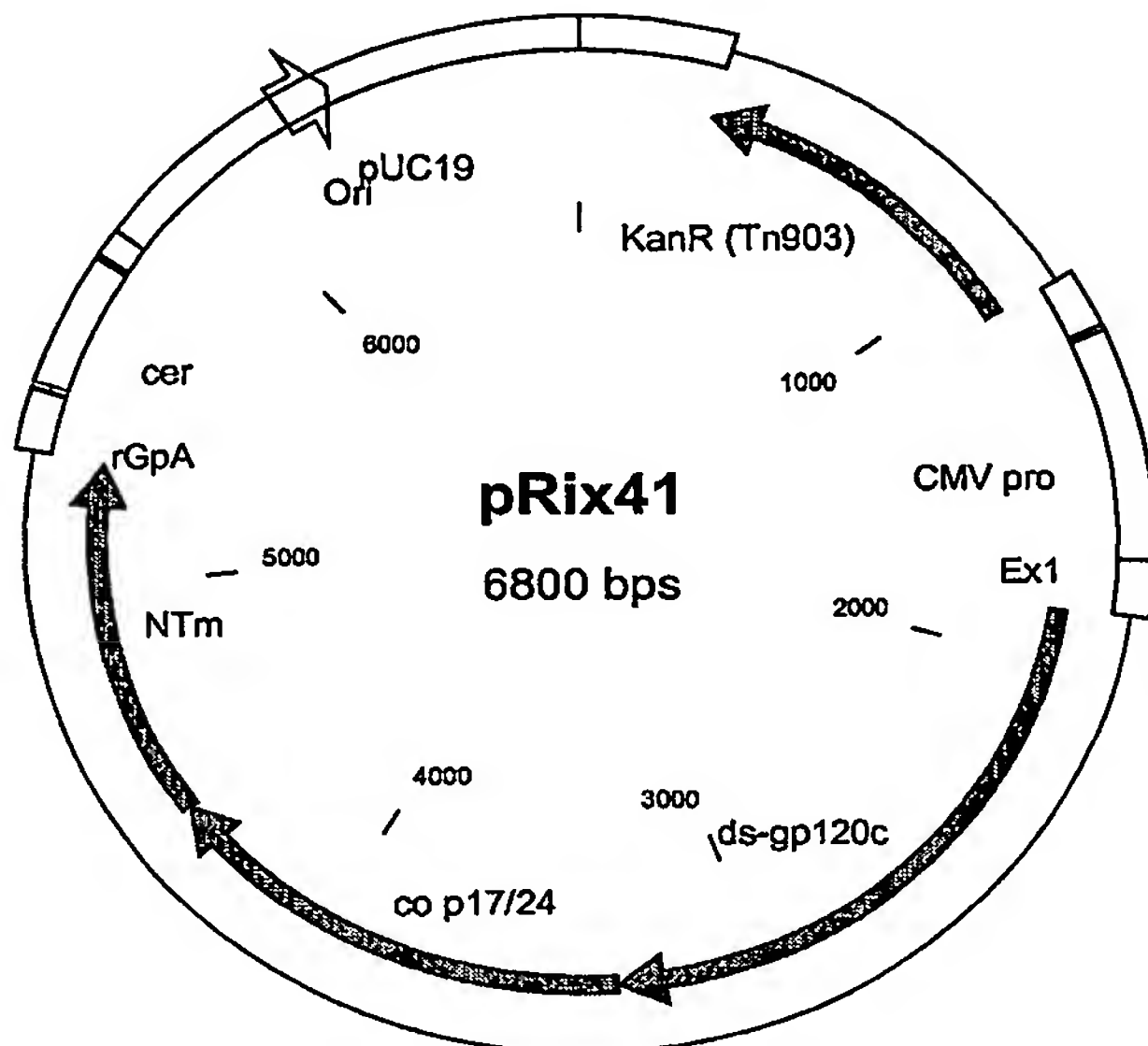
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**Aminoacid sequence of insert**

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 FDGKGLCTNVSTVQCTHGI RPVVSTQLLLNGSLAEEEVVIRSDNFMNTKTIIVQLNESVAINCTRPNNT  
 RKGIIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLQIIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTGNSTITLPCRKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
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 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTV  
 ATLYCVHQRIEIKDTKEALDKIEEEQNKSKKKAQQAADTGHSNQVSQNYPIVQNIQGQMVHQAI SPRTL N  
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 YVDRFYKTLRAEQASQEVKNWMTETLLVQANANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGK  
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 LRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDWLYHTQGYFPDWQNYTPGPGVRYPLTFGW CYKLV  
 PVEPKVEEANKGENTSLLHPVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNCTSEPVDPRLEP  
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 TGPKE [SEQ ID NO: 71]

**Figure 15**

pRix41

**DNA sequence of insert**

```

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**Figure 15 continued**

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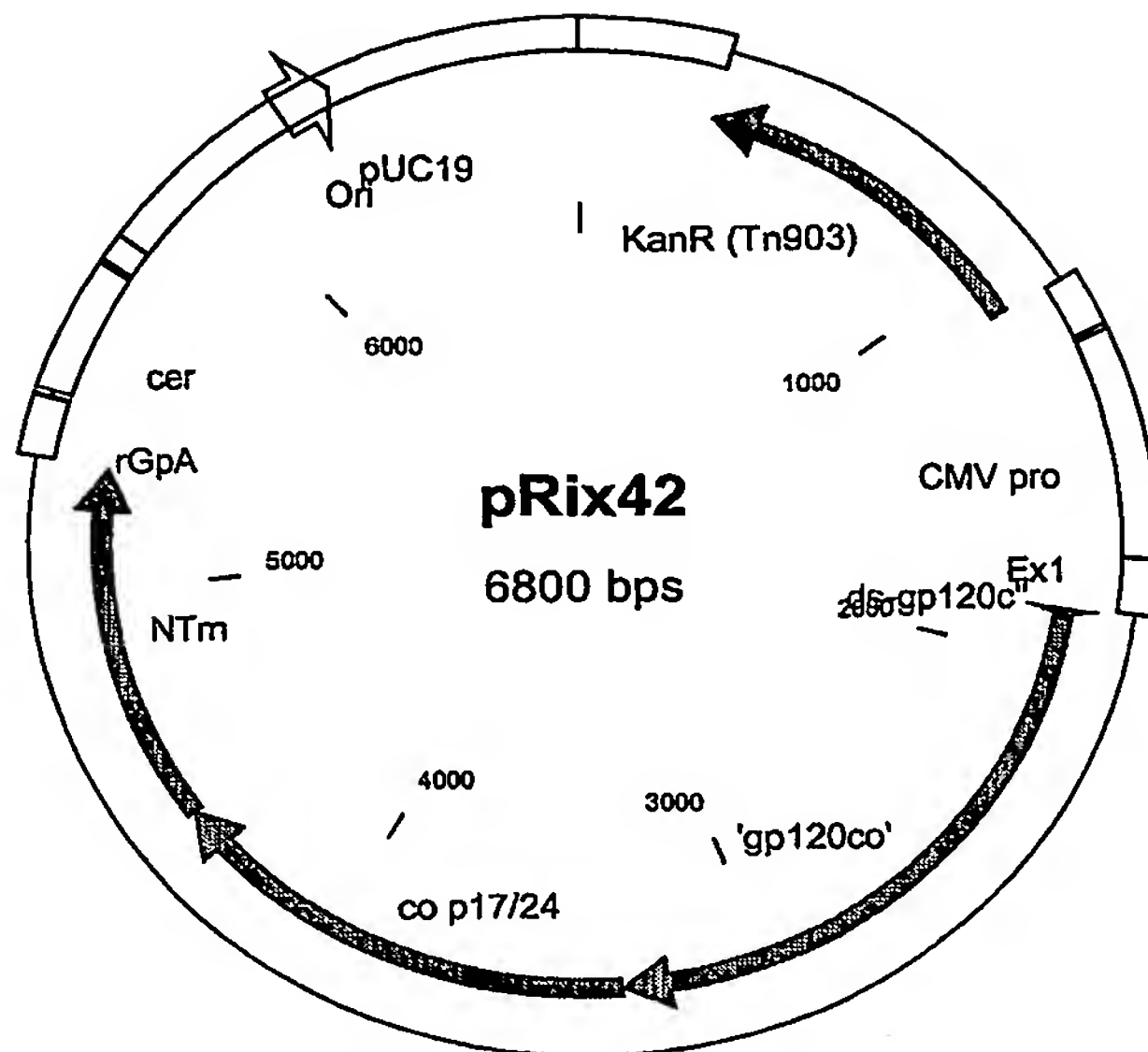
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 NCGGEFFYCDTTQLFNSTWNGTEGNNTGNSTITLPCRIKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
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 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTV  
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 KWSKSSVVGWPTVRERMRAEPAADGVGAASRDLEKHGAITSNTAATNAACAWLEAQEEEEVGFPVTPQV  
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**Figure 16**

pRix42

**DNA sequence of insert**

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**Figure 16 continued**

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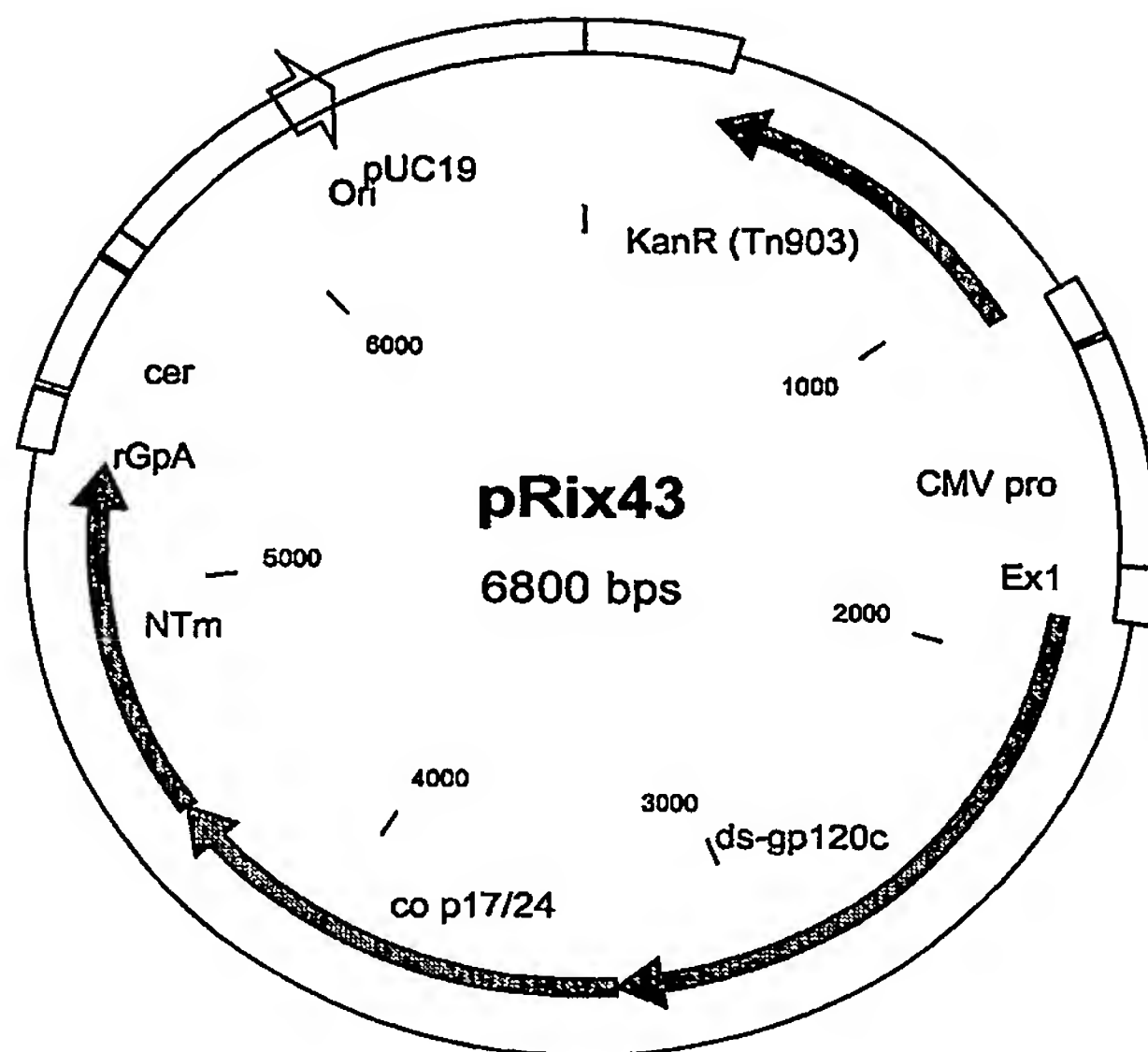
**Aminoacid sequence of insert**

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 PLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDWIIYHTQGYFPDWQNYTPGPGVRYPLTFGWICYKL  
 VPVEPDKVEEANKGENTSLAHPVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNCTSEPVDPRLE  
 PWKHPGSQPKTACTNCYCKKCCFHCQVCFITAALGISYGRKKRRQRPPQGSQTHQVSLSKQPTSQSKGE  
 PTGPKE [SEQ ID NO: 75]



Figure 17

pRix43



## DNA sequence of insert

```

ATGGCCGAGCAGCTGTGGGTACCGTCTACTACGGCGTGCTGTGTGGAAGGAGGCCACGACCACCCTCTT
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CGGACCCCAACCCCAAGGAGGTGGTGTCTGGGAAACGTGACCGAGTACTTCAACATGTGGAAGAATAACATG
GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC
TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA
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CAGAAGGAATACGCGCTGTTTTATAATCTCGATGTGGTCCCCATCGACGACGACAATGCCACCACCAAGAA
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ACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGTGGCGATTAACTGTACCCGGCCTAACAACAACACC
CGTAAGGGCATCCACATCGGGCCTGGACGGGCCTTCTATGCCGCCCGCAAGATCATCGGCGACATCCGGCA
GGCCCATTGCAACCTCTCCCGCGCCAGTGGAATAACACCTGAAGCAGATCGTGATCAAGCTGAGAGAGC
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CTGCTCACCAGAGACGGGGGCACCGAGGGCAACGGCACGGAGAACGAGACGGAGATCTTCAGGCCCCGGCGG
CGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTGGAGCCGCTCGGCG
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GGAGCAAAACAAGAGCAAGAAGAAGGCCAGCAGGCAGCTGCTGACACTGGGCATAGCAACCAGGTATCAC
AGAACTATCCTATTGTCCAAAACATTGAGGGCCAGATGGTTCATCAGGCCATCAGCCCCCGGACGCTCAAT
GCCTGGGTGAAGGTTGTGCAAGAGAAGGCCTTTTCTCCTGAGGTTATCCCCATGTTCTCCGCTTTGAGTGA
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```

**Figure 17 continued**

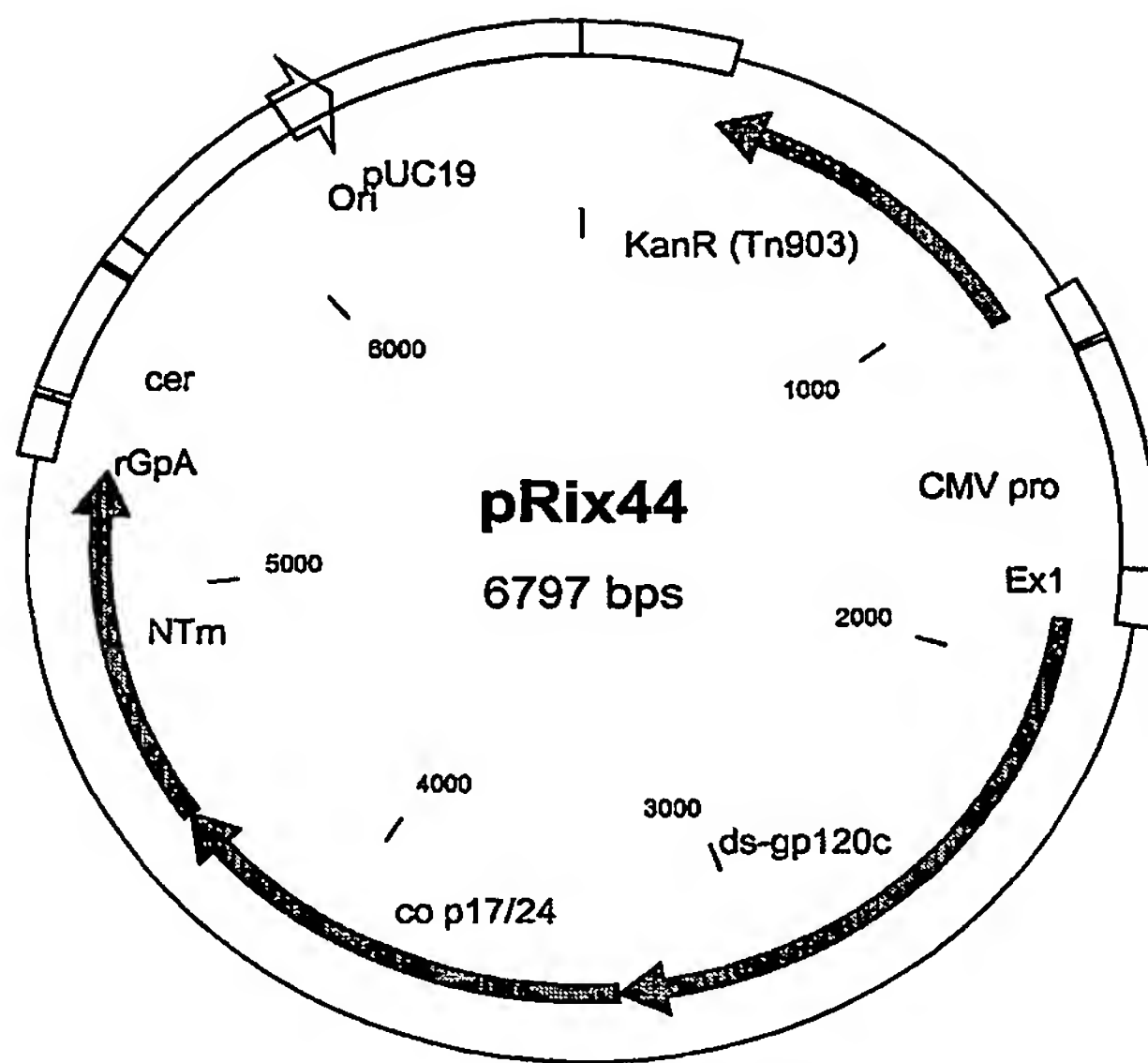
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 ATGGATGACCAACAATCCTCCCATCCCAGTTGGAGAAATCTATAAACGGTGGATCATTCTCGGTCTCAATA  
 AAATTGTTAGAATGTACTCTCCGACATCCATCCTTGACATTAGACAGGGACCCAAAGAGCCTTTTAGGGAT  
 TACGTCGACCGGTTTTTATAAGACCCTGCGAGCAGAGCAGGCCTCTCAGGAGGTCAAAAAGTGGATGACGGA  
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 AAGTGGTCAAAAAGTAGTGTGGTTGGATGGCCTACTGTAAGGGAAAGAATGAGACGAGCTGAGCCAGCAGC  
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 CCCTGGAAGCATCCAGGAAGTCAGCCTAAACTGCTTGTACCAATTGCTATTGTAAAAAGTGTTGCTTTCA  
 TTGCCAAGTTTGTTCATAACAGCTGCCTTAGGCATCTCCTATGGCAGGAAGAAGCGGAGACAGCGACGAA  
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**Aminoacid sequence of insert**

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 QKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPKVSFEPIPIHYCAPAGFAILKCNKNT  
 FDGKGLCTNVSTVQCTHGIRPVVSTQLLNGSLAESEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT  
 RKGIIHIGPGRFYAARKIIGDIRQAHCNLSRAQWNNTLQKIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTGNSTITLPCRIKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGTEGNGTENETEIFRPGGGDMRDNRSELYKYKVKVEPLGVAPTRAKRRVVQRMGARASVLSGG  
 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTV  
 ATLYCVHQRIEIKDTKEALDKIEEEQNKSKKKAQQAADTGHSNQVSQNYPIVQNIQGQMVHQAI SPRTL N  
 AWWKVVEEKAFSPFVPMFSALSEGATPQDLNLTMLNTVGGHQAAMQMLKETINEEAAEWDRVHPVHAGPIA  
 PGQMRPRGSDIAGTTSTLQEQIGWMTNNPPIPVGEIYKRWIILGLNKIVRMYSPTSILDIRQGPKEPFRD  
 YVDRFYKTLRAEQASQEVKNWMTETLLVQANANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGG  
 KWSKSSVVGWPTVRERMRAEPAADGVGAASRDLEKHGAITSSNTAATNAACAWLEAQEEEEVGFPVTPQV  
 PLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDWIYHTQGYFPDWQNYTPGPGVRYPLTFGWICYKL  
 VPVEPKDVEEANKGENTSAAHPVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNCTSEPVDPRL E  
 PWKHPSQPKTACTNCYCKKCCFHCQVCFITAALGISYGRKKRRQRRRPQGSQTHQVSLSKQPTSQSKGE  
 PTGPKE [SEQ ID NO: 77]

**Figure 18**

pRix44

**DNA sequence of insert**

ATGGCCGAGCAGCTGTGGGTCACCGTCTACTACGGCGTGCTGTGTGGAAGGAGGCCACGACCACCTCTT  
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 CGGACCCCAACCCCAAGGAGGTGGTGCTGGGAAACGTGACCGAGTACTTCAACATGTGGAAGAATAACATG  
 GTGGATCAGATGCACGAGGACATCATCTCTGTGTGGGACCAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC  
 TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA  
 CCGGAGAGATTTCGAAGGGCGAGATCAAGAACTGCTCCTTCAATATCACGACCTCGATCAGAGACAAGGTG  
 CAGAAGGAATACGCGCTGTTTTATAATCTCGATGTGGTCCCATCGACGACGACAATGCCACCACCAAGAA  
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 GGCCCATTTGCAACCTCTCCCGCGCCCAAGTGAATAACACCTGAAGCAGATCGTGATCAAGCTGAGAGAGC  
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 CGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTGGAGCCGCTCGGCG  
 TGGCCCCCACC CGGGCCAAGCGCCGCGTCTGTGAGAGAATGGGTGCCCGAGCTTCGGTACTGTCTGGTGGA  
 GAGCTGGACAGATGGGAGAAAATTAGGCTGCGCCCGGAGGCAAAAAGAAATACAAGCTCAAGCATATCGT  
 GTGGGCCTCGAGGGAGCTTGAACGGTTTGCCGTGAACCCAGGCCTGCTGGAAACATCTGAGGGATGTCGCC  
 AGATCCTGGGGCAATTGCAGCCATCCCTCCAGACCGGGAGTGAAGAGCTGAGGTCCCTTGTATAACACAGTG  
 GCTACCCTCTACTGCGTACACCAGAGGATCGAGATTAAGGATACCAAGGAGGCCTTGGACAAAATTGAGGA  
 GGAGCAAAACAAGAGCAAGAAGAAGGCCAGCAGGCAGCTGCTGACACTGGGCATAGCAACCAGGTATCAC  
 AGAACTATCCTATTGTCCAAAACATTCAGGGCCAGATGGTTCATCAGGCCATCAGCCCCCGGACGCTCAAT  
 GCCTGGGTGAAGGTTGTGCAAGAGAAGGCCTTTTCTCCTGAGGTTATCCCCATGTTCTCCGCTTTGAGTGA  
 GGGGGCCACTCCTCAGGACCTCAATACAATGCTTAATACCGTGGGCGGCCATCAGGCCGCGCATGCAATGT

**Figure 18 continued**

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 ATGGATGACCAACAATCCTCCCATCCCAGTTGGAGAAATCTATAAACGGTGGATCATTTCTCGGTCTCAATA  
 AAATTGTTAGAAATGTACTCTCCGACATCCATCCTTGACATTAGACAGGGACCCAAAGAGCCTTTTAGGGAT  
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 GACACTCCTGGTACAGAACGCTAACCCCGACTGCAAAACAATCTTGAAGGCACTAGGCCCGGCTGCCACCC  
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 TGGAAGCATCCAGGAAGTCAGCCTAAAACTGCTTGTACCAATTGCTATTGTAAAAAGTGTTGCTTTTCATTG  
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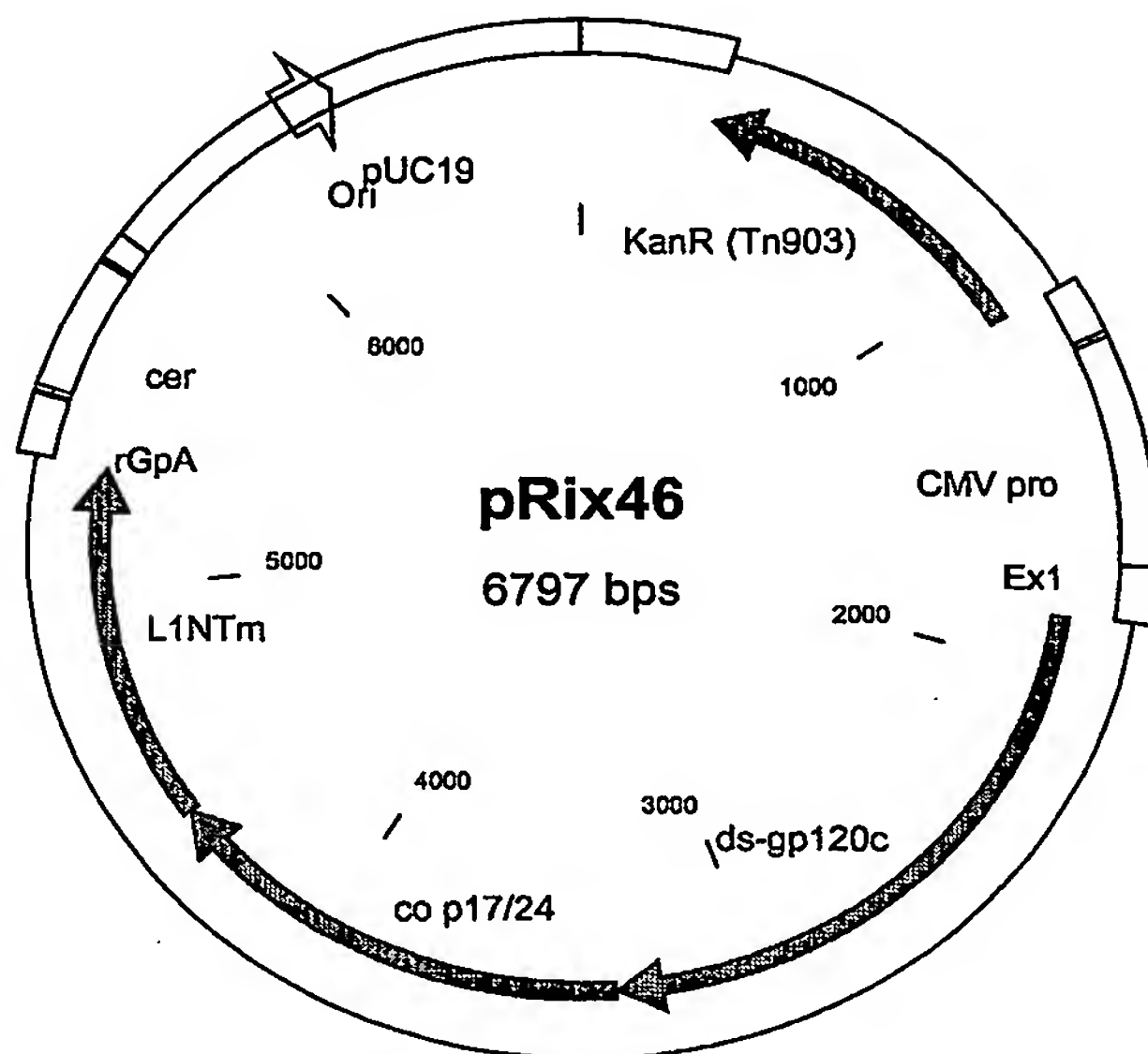
**Aminoacid sequence of insert**

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 FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAEEEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT  
 RKGIIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTTEGNSTITLPCRIKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGTEGNNGTENETEIFRPGGGDMRDNRSELYKYKVVEPLGVAPTRAKRRVVQRMGARASVLSGG  
 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLOPSLOTGSEELRSLYNTV  
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 PGQMPREPRGSDIAGTTSTLQEQIGWMTNNPPIPVGEIYKRWIILGLNKIVRMYSPTSILDIRQGPKEPFRD  
 YVDRFYKTLRAEQASQEVKNWMTETLLVQANANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGK  
 WSKSSVVGWPTVRRERMRAEPAADGVGAASRDLEKHGAITSSNTAATNAACAWLEAQEEEEVGFPVTPQVP  
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 PVEPKVVEANKGENTSAAHPVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNCTSEPVDPRLEP  
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 TGPKE [SEQ ID NO: 79]



**Figure 19**

pRix46

**DNA sequence of insert**

ATGGCCGAGCAGCTGTGGGTCACCGTCTACTACGGCGTGCCTGTGTGGAAGGAGGCCACGACCACCCTCTT  
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 CGGACCCCAACCCCAAGGAGGTGGTGTCTGGGAAACGTGACCGAGTACTTCAACATGTGGAAGAATAACATG  
 GTGGATCAGATGCACGAGGACATCATCTCTCTGTGGGACCAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC  
 TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA  
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 CACCCAGCTGCTGCTGAACGGGTCCCTGGCTGAGGAGGAGGTGGTGATCCGGTCCGACAACCTTCATGGACA  
 ACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGTGGCGATTAACTGTACCCGGCCTAACAACAACACC  
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 GGCCCATTGCAACCTCTCCCGCGCCCAAGTGAATAACACCCTGAAGCAGATCGTGATCAAGCTGAGAGAGC  
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 AACTGCGGGGGCGAGTTCTTCTACTGCGATACGACACAGCTCTTCAACTCCACCTGGAACGGCACCGAGGG  
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 CTGCTCACCAGAGACGGGGGCACCGAGGGCAACGGCACGGAGAACGAGACGGAGATCTTCAGGCCCGGCGG  
 CGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTGGAGCCGCTCGGCG  
 TGGCCCCCACC CGGGCCAAGCGCCGCGTCGTGCAGAGAATGGGTGCCCGAGCTTCGGTACTGTCTGGTGG  
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 GCTACCCTCTACTGCGTACACCAGAGGATCGAGATTAAGGATACCAAGGAGGCCTTGGACAAAATTGAGGA  
 GGAGCAAAAACAAGAGCAAGAAGAAGGCCAGCAGGCAGCTGCTGACACTGGGCATAGCAACCAGGTATCAC  
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 GCCTGGGTGAAGGTTGTGCAAGAGAAGGCCTTTTCTCCTGAGGTTATCCCCATGTTCTCCGCTTTGAGTGA  
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**Figure 19 continued**

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 TGGAAGCATCCAGGAAGTCAGCCTAAAACCTGCTTGTACCAATTGCTATTGTAAAAAGTGTTGCTTTCATTG  
 CCAAGTTTGTTCATAACAGCTGCCTTAGGCATCTCCTATGGCAGGAAGAAGCGGAGACAGCGACGAAGAC  
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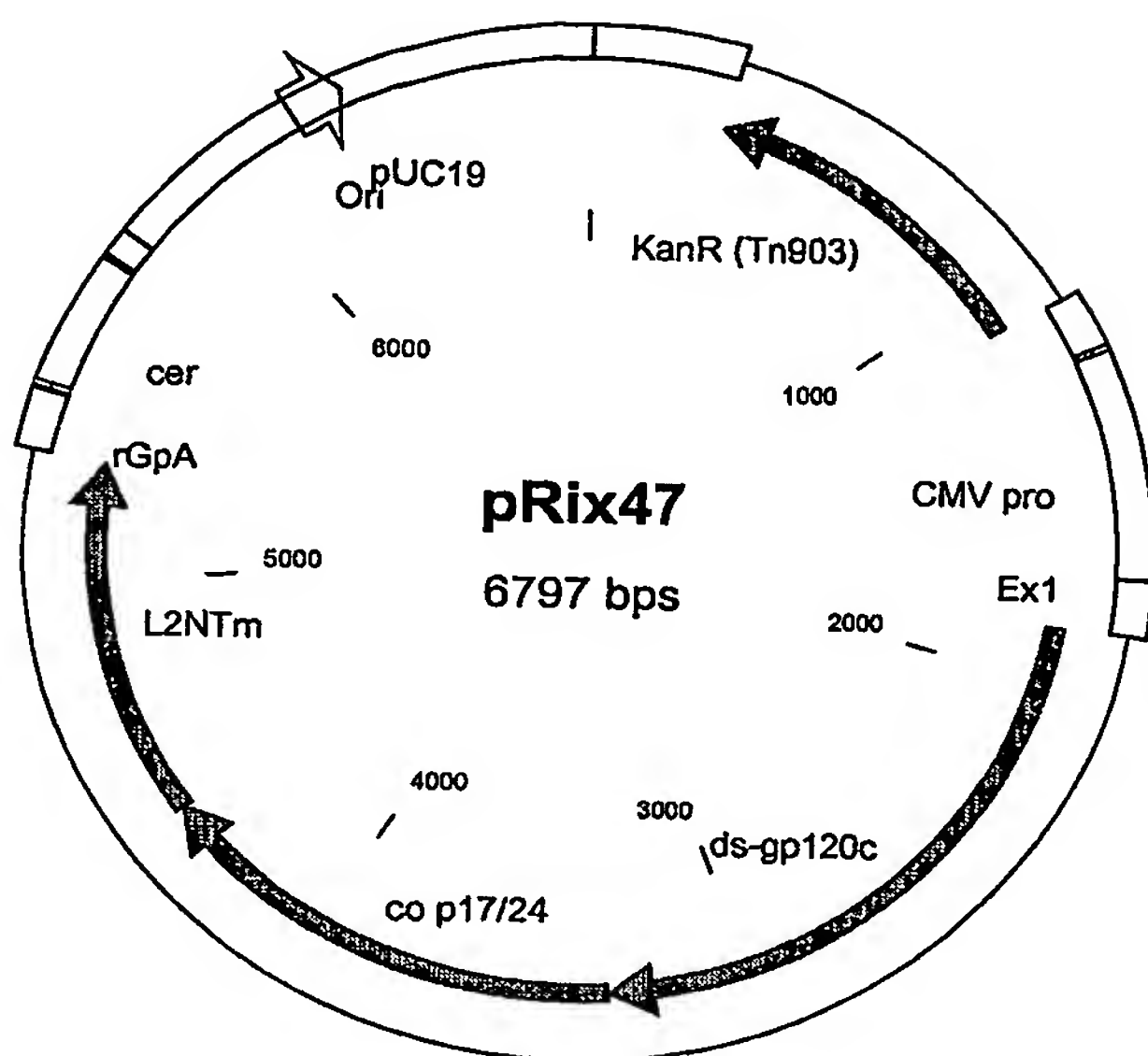
**Aminoacid sequence of insert**

MAEQLWVTVYYGVVPVWKEATTTLFCASDAKAYDTEVHNWATHACVPTDPNPQEVVLGNVTEYFNMWKNM  
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 QKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPKVSFEPPIPIHYCAPAGFAILKCNKNT  
 FDGKGLCTNVSTVQCTHGIRPVVSTQLLNGLSLAEEEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT  
 RKGIIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIFKNQSSGGDPEIVRHSF  
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 PVEPDKVEEANKGENTSALHPVSLHGMDPEREVLEWRFD SRLAFHHVARELHPEYFKNCTSEPVDPRLEP  
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 TGPKE [SEQ ID NO: 81]



**Figure 20**

pRix47

**DNA sequence of insert**

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 GTGGATCAGATGCACGAGGACATCATCTCTGTGTGGGACCAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC  
 TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA  
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 CAAGACGACGCGTAATTTTCAGACTCATTCACTGCAACAGCAGCGTCATGACGCGAGGCCTGCCCAAGGTGT  
 CCTTCGAACCAATCCCGATCCATTACTGTGCCCCGTCCGGATTTCGCGATCCTCAAGTGTAACAACAAGACC  
 TTCGACGGGAAGGGCCTGTGCACCAACGTCAGCACGGTGCAGTGCACCCATGGCATCCGCCCCGTCTGTGAG  
 CACCCAGCTGCTGCTGAACGGGTCCCTGGCTGAGGAGGAGGTGGTGTATCCGGTCCGACAACCTTCATGGACA  
 ACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGTGGCGATTAACTGTACCCGGCCTAACAACAACACC  
 CGTAAGGGCATCCACATCGGGCCTGGACGGGCCTTCTATGCCGCCCCGCAAGATCATCGGCGACATCCGGCA  
 GGCCCATTGCAACCTCTCCCGCGCCAGTGAATAACACCCTGAAGCAGATCGTGATCAAGCTGAGAGAGC  
 ACTTTGGAAACAAGACCATCAAGTTCAATCAGAGTTCTGGCGGAGACCCCGAGATCGTGCGGCACTCCTTC  
 AACTGCGGGGGCGAGTTCTTCTACTGCGATACGACACAGCTCTTCAACTCCACCTGGAACGGCACCAGGGG  
 CAACAACACAGAGGGGAACTCCACTATCACCTCCCTTGCCGCATCAAGCAGATCATCAACATGTGGCAGG  
 AGGTGGGAAAGGCCATGTATGCCCCCCCCATCGGGGGCCAGATCCGCTGCTCCTCAACATCACCGGCCTG  
 CTGCTCACCAGAGACGGGGGCACCGAGGGCAACGGCACGGAGAACGAGACGGAGATCTTCAGGCCCGGCGG  
 CGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTGGAGCCGCTCGGCG  
 TGGCCCCCACC CGGGCCAAGCGCCGCTCGTGCAGAGAATGGGTGCCCGAGCTTCGGTACTGTCTGGTGGGA  
 GAGCTGGACAGATGGGAGAAAATTAGGCTGCGCCCCGGGAGGCAAAAAGAAATACAAGCTCAAGCATATCGT  
 GTGGGCCTCGAGGGAGCTTGAACGGTTTGCCGTGAACCCAGGCCTGCTGGAAACATCTGAGGGATGTCGCC  
 AGATCCTGGGGCAATTGCAGCCATCCCTCCAGACCGGGAGTGAAGAGCTGAGGTCCTTGTATAACACAGTG  
 GCTACCCTCTACTGCGTACACCAGAGGATCGAGATTAAGGATACCAAGGAGGCCTTGGACAAAATTGAGGA  
 GGAGCAAAAACAAGAGCAAGAAGAAGGCCAGCAGGCAGCTGCTGACACTGGGCATAGCAACCAGGTATCAC  
 AGAACTATCCTATTGTCCAAAACATTCAGGGCCAGATGGTTCATCAGGCCATCAGCCCCCGGACGCTCAAT  
 GCCTGGGTGAAGGTTGTGCAAGAGAAGGCCTTTTCTCCTGAGGTTATCCCATGTTCTCCGCTTTGAGTGA  
 GGGGGCCACTCCTCAGGACCTCAATACAATGCTTAATACCGTGGGCGGCCATCAGGCCGCCATGCAAATGT

**Figure 20 continued**

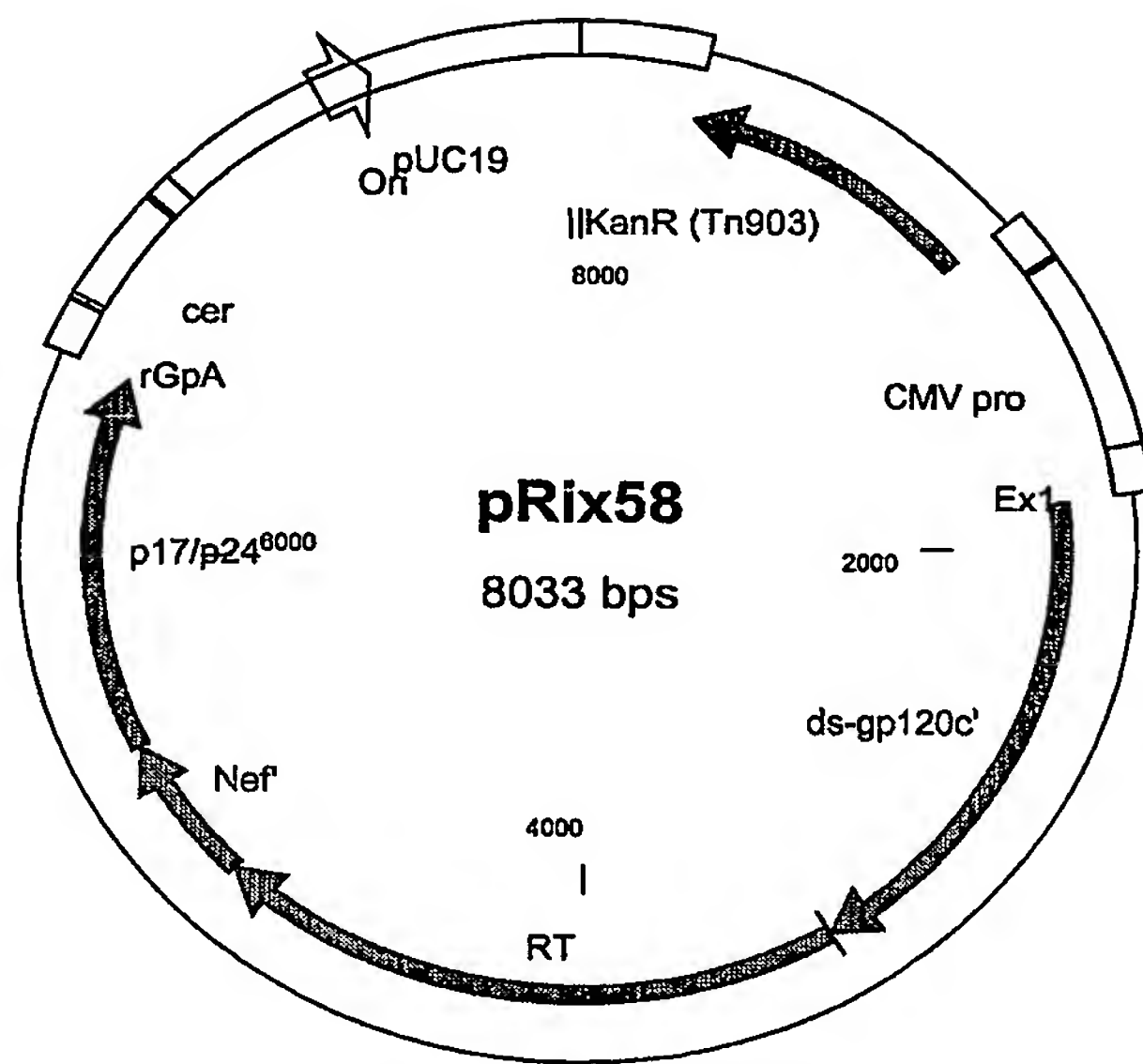
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 CCCGGACAGATGCGGGAGCCTCGCGGCTCTGACATTGCCGGCACCACCTCTACACTGCAAGAGCAAATCGG  
 ATGGATGACCAACAATCCTCCCATCCCAGTTGGAGAAATCTATAAACGGTGGATCATTCTCGGTCTCAATA  
 AAATTGTTAGAATGTACTCTCCGACATCCATCCTTGACATTAGACAGGGACCCAAAGAGCCTTTTAGGGAT  
 TACGTGACCGGTTTTATAAGACCCTGCGAGCAGAGCAGGCCTCTCAGGAGGTCAAAAAGTGGATGACGGA  
 GACACTCCTGGTACAGAACGCTAACCCCGACTGCAAAACAATCCTGAAGGCACTAGGCCCGGCTGCCACCC  
 TGGAAGAGATGATGACCGCCTGTCAGGGAGTAGGCGGACCCGGACACAAAGCCAGAGTGTTGATGGGCAAG  
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 TTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTTAAAAGAAAAGGGGGGACTGGAAGG  
 GCTAATTCACCTCCCAACGAAGACAAGATATCCTTGATCTGTGGATCTACCACACACAAGGCTACTTCCCTG  
 ATTGGCAGAACTACACACCAGGGCCAGGGGTCAGATATCCACTGACCTTTGGATGGTGCTACAAGCTAGTA  
 CCAGTTGAGCCAGATAAGGTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGGCACACCCTGTGAGCCT  
 GCATGGAATGGATGACCCTGAGAGAGAAGTGTTAGAGTGGAGGTTTGACAGCCGCCTAGCATTTCATCACG  
 TGGCCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCCTAGTGAGCCAGTAGATCCTAGACTAGAGCCC  
 TGGAAGCATCCAGGAAGTCAGCCTAAACTGCTTGTACCAATTGCTATTGTAAAAAGTGTGCTTTCATTG  
 CCAAGTTTGTTCATAACAGCTGCCTTAGGCATCTCCTATGGCAGGAAGAAGCGGAGACAGCGACGAAGAC  
 CTCCTCAAGGCAGTCAGACTCATCAAGTTTCTCTATCAAAGCAACCCACCTCCCAATCCAAAGGGGAGCCG  
 ACAGGCCCCGAAGGAATAA [SEQ ID NO: 82]

**Aminoacid sequence of insert**

MAEQLWVTVYYGVPVWKEATTTLFCASDAKAYDTEVHNVWATHACVPTDPNPQEVVLGNVTEYFNMWKNNM  
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 QKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPKVSFEPPIPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAEEVVRSDNFMDNTKTIIVQLNESVAINCTRPNNT  
 RKGIIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTEGNSTITLPCRKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGTEGNGTENETEIFRPGGDMRDNRSELYKYKVVKVEPLGVAPTRAKRRVVQRMGARASVLSGG  
 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTV  
 ATLYCVHQRIEIKDTKEALDKIEEEQNKSKKKAQQAADTGHSNQVSQNYPIVQNIQGQMVHQAI SPRTLN  
 AWWKVVEEKAFSPEVIMFSALESGATPQDLNMTLNTVGGHQAAMQMLKETINEEAAEWDRVHPVHAGPIA  
 PGQMRPRGSDIAGTTSTLQEQIGWMTNPNPIPVGEEIYKRWIILGLNKIVRMYSPTSILDIRQGPKEPFRD  
 YVDRFYKTLRAEQASQEVKNWMTETLLVQANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGK  
 WSKSSVVGWPTVRERMRAEPAADGVGAASRDLEKHGAITSNTAATNAACAWLEAQEEEEVGFPVTPQVP  
 LRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDLWIYHTQGYFPDWQNYTPGPGVRYPLTFGW CYKLV  
 PVEPDKVEEANKGENTSLAHPVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNCTSEPVDPRLEP  
 WKHPGSQPKTACTNCYCKKCCFHCQVCFITAALGISYGRKKRRQRRRPPQGSQTHQVSLSKQPTSQSKGEP  
 TGPKE [SEQ ID NO: 83]

**Figure 21**

pRix58



## DNA sequence of insert

ATGGCCGAGCAGCTGTGGGTCACCGTCTACTACGGCGTGCTGTGTGGAAGGAGGCCACGACCACCCTCTT  
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 CGGACCCCAACCCCAAGGAGGTGGTGCTGGGAAACGTGACCGAGTACTTCAACATGTGGAAGAATAACATG  
 GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC  
 TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA  
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 CAGAAGGAATACGCGCTGTTTTATAATCTCGATGTGGTCCCCATCGACGACGACAATGCCACCACCAAGAA  
 CAAGACGACGCGTAATTTCACTCATTCATGCAACAGCAGCGTCATGACGACGAGCCTGCCCAAGGTGT  
 CCTTCGAACCAATCCCGATCCATTACTGTGCCCTGCCGGATTCGCGATCCTCAAGTGTAACAACAAGACC  
 TTCGACGGGAAGGGCCTGTGCACCAACGTGACGACGGTGCAGTGCACCCATGGCATCCGCCCCGTGCTGAG  
 CACCCAGCTGCTGCTGAACGGGTCCCTGGCTGAGGAGGAGGTGGTGATCCGGTCGGACAACCTTCATGGACA  
 ACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGTGGCGATTAACTGTACCCGGCCTAACAACAACACC  
 CGTAAGGGCATCCACATCGGGCCTGGACGGGCCTTCTATGCCGCCCGCAAGATCATCGGCGACATCCGGCA  
 GGCCCATTTGCAACCTCTCCCGCGCCCAAGTGGGAATAACCCCTGAAGCAGATCGTGATCAAGCTGAGAGAGC  
 ACTTTGGAAACAAGACCATCAAGTTCAATCAGAGTTCTGGCGGAGACCCCGAGATCGTGCGGCACTCCTTC  
 AACTGCGGGGGCGAGTTCTTCTACTGCGATACGACACAGCTCTTCAACTCCACCTGGAACGGCACCAGGGG  
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 AGGTGGGAAAGGCCATGTATGCCCCCCCCATCGGGGGCCAGATCCGCTGCTCCTCCAACATCACCGGCCTG  
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 CGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTGGAGCCGCTCGGCG  
 TGGCCCCCACC CGGGCAAGCGCCGCGTGTGTCAGAGAATGGGCCCCATCAGTCCCATCGAGACCGTGCCG  
 GTGAAGCTGAAACCCGGGATGGACGGCCCCAAGGTCAAGCAGTGGCCACTCACCGAGGAGAAGATCAAGGC  
 CCTGGTGGAGATCTGCACCGAGATGGAGAAAGAGGGCAAGATCAGCAAGATCGGGCCTGAGAACCCATACA  
 ACACCCCGTGTTTGCCATCAAGAAGAAGGACAGCACCAGTGGCGCAAGCTGGTGGATTTCGGGAGCTG  
 AATAAGCGGACCCAGGATTTCTGGGAGGTCCAGCTGGGCATCCCCCATCCGGCCGGCCTGAAGAAGAAGAA  
 GAGCGTGACCGTGCTGGACGTGGGCGACGCTTACTTCAGCGTCCCTCTGGACGAGGACTTTAGAAAGTACA  
 CCGCCTTTACCATCCCATCTATCAACAACGAGACCCCTGGCATCAGATATCAGTACAACGTCCTCCCCCAG  
 GGCTGGAAGGGCTCTCCCGCCATTTTCCAGAGCTCCATGACCAAGATCCTGGAGCCGTTTCGGAAGCAGAA  
 CCCCGATATCGTCATCTACCAGTACATGGACGACCTGTACGTGGGCTCTGACCTGGAAATCGGGCAGCATC



Figure 21 continued

GCACGAAGATTGAGGAGCTGAGGCAGCATCTGCTGAGATGGGGCCTGACCACTCCGGACAAGAAGCATCAG  
AAGGAGCCGCCATTCCTGAAGATGGGCTACGAGCTCCATCCCGACAAGTGGACCGTGCAGCCTATCGTCCT  
CCCCGAGAAGGACAGCTGGACCGTGAACGACATCCAGAAGCTGGTGGGCAAGCTCAACTGGGCTAGCCAGA  
TCTATCCCGGGATCAAGGTGCGCCAGCTCTGCAAGCTGCTGCGCGGCACCAAGGCCCTGACCGAGGTGATT  
CCCCTCACGGAGGAAGCCGAGCTCGAGCTGGCTGAGAACCAGGAGATCCTGAAGGAGCCCGTGCACGGCGT  
GTACTATGACCCCTCCAAGGACCTGATCGCCGAAATCCAGAAGCAGGGCCAGGGGCAGTGGACATACCAGA  
TTTACCAGGAGCCTTTCAAGAACCTCAAGACCGGCAAGTACGCCCCGATGAGGGGCGCCACACCAACGAT  
GTCAAGCAGCTGACCGAGGCCGTCCAGAAGATCACGACCGAGTCCATCGTGATCTGGGGGAAGACACCCAA  
GTTCAAGCTGCCTATCCAGAAGGAGACCTGGGAGACGTGGTGGACCGAATATTGGCAGGCCACCTGGATT  
CCGAGTGGGAGTTCTGTAATACACCTCCTCTGGTGAAGCTGTGGTACAGCTCGAGAAGGAGCCCATCGTG  
GGCGCGGAGACATTCTACGTGGACGGCGCGGCCAACC GCGAAACAAAGCTCGGGAAGGCCGGGTACGTCAC  
CAACCGGGGCCCGCCAGAAGGTGCTCACCTGACCGACACCACCAACCAGAAGACGGAGCTGCAGGCCATCT  
ATCTCGCTCTCCAGGACTCCGGCCTGGAGGTGAACATCGTGACGGACAGCCAGTACGCGCTGGGCATTATT  
CAGGCCCAGCCGGACCAGTCCGAGAGCGAACTGGTGAACCAGATTATCGAGCAGCTGATCAAGAAAGAGAA  
GGTCTACCTCGCCTGGGTCCCGGCCCATAGGGCATTGGCGGCAACGAGCAGGTGACAAGCTGGTGAGTG  
CGGGGATTAGAAAGGTGCTGATGGTGGGTTTTCCAGTCACACCTCAGGTACCTTTAAGACCAATGACTTAC  
AAGGCAGCTGTAGATCTTAGCCACTTTTTTAAAGAAAAGGGGGGACTGGAAGGGCTAATCACTCCCAAAG  
AAGACAAGATATCCTTGATCTGTGGATCTACCACACACAAGGCTACTTCCCTGATTGGCAGAACTACACAC  
CAGGGCCAGGGGTCAGATATCCACTGACCTTTGGATGGTGCTACAAGCTAGTACCAGTTGAGCCAGATAAG  
GTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGTTACACCTGTGAGCCTGCATGGGATGGATGACCC  
GGAGAGAGAAGTGTTAGAGTGGAGGTTTGACAGCCGCCTAGCATTTTCATCACGTGGCCCGAGAGCTGCATC  
CGGAGTACTTCAAGAACTGCATGGGTGCCCGAGCTTCGGTACTGTCTGGTGGAGAGCTGGACAGATGGGAG  
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TGAACGGTTTTGCCGTGAACCCAGGCCTGCTGGAAACATCTGAGGGATGTCGCCAGATCCTGGGGCAATTGC  
AGCCATCCCTCCAGACCGGGAGTGAAGAGCTGAGGTCTTGTATAACACAGTGGCTACCCTCTACTGCGTA  
CACCAGAGGATCGAGATTAAGGATACCAAGGAGGCCTTGGACAAAATTGAGGAGGAGCAAAACAAGAGCAA  
GAAGAAGGCCCCAGCAGGCAGCTGCTGACACTGGGCATAGCAACCAGGTATCACAGAACTATCCTATTGTCC  
AAAACATTCAGGGCCAGATGGTTCATCAGGCCATCAGCCCCCGGACGCTCAATGCCTGGGTGAAGGTTGTC  
GAAGAGAAGGCCTTTTCTCCTGAGGTTATCCCATGTTCTCCGCTTTGAGTGAGGGGGCCACTCCTCAGGA  
CCTCAATAACAATGCTTAATAACCGTGGGCGGCCATCAGGCCGCCATGCAAATGTTGAAGGAGACTATCAACG  
AGGAGGCAGCCGAGTGGGACAGAGTGCATCCCGTCCACGCTGGCCCAATCGCGCCCGGACAGATGCGGGAG  
CCTCGCGGCTCTGACATTGCCGGCACCACCTCTACACTGCAAGAGCAAATCGGATGGATGACCAACAATCC  
TCCCATCCAGTTGGAGAAATCTATAAACGGTGGATCATCCTGGGCCTGAACAAGATCGTGCGCATGTACT  
CTCCGACATCCATCCTTGACATTAGACAGGGACCCAAAGAGCCTTTTAGGGATTACGTGACCGGTTTTAT  
AAGACCCTGCGAGCAGAGCAGGCCTCTCAGGAGGTCAAAAAC'TGGATGACGGAGACACTCCTGGTACAGAA  
CGCTAACCCCGACTGCAAAACAATCTTGAAGGCACTAGGCCCGGCTGCCACCCTGGAAGAGATGATGACCG  
CCTGTCAGGGAGTAGGCGGACCCGGACACAAAGCCAGAGTGTGTAA [SEQ ID NO: 84]

## Aminoacid sequence of insert

MAEQLWVTVYYGVVPVWKEATTTLFCASDAKAYDTEVHNWATHACVPTDPNPQEVVLGNVTEYFNMWKNNM  
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QKEYALFYNLDVVPIDDDNATTKNKTTNRNFRLIHCNSSVMTQACPKVSFEPPIPIHYCAPAGFAILKCNKNT  
FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAESEVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT  
RKGIIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
NCGGEFFYCDTTQLFNSTWNGTEGNTEGNSTITLPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
LLTRDGGTEGNNGTENETEIFRPGGGDMRDNRSELYKYKVKVEPLGVAPTRAKRRVVQRMGPISPIETVP  
VKLKPGMDGPKVKQWPLTEEKIKALVEICTEMEKEGKISKIGPENPYNTPVFAIKKDKSTKWRKLVDREL  
NKRTQDFWEVQLGIPHPAGLKKKKSVTVLDVGDAYFSVPLDEDFRKYTAFTIPSINNETPGIRYQYNVLPQ  
GWKGSPIAFQSSMTKILEPFRKQNPDIYQYMDLDYVGSLEIGQHRTKIEELRQHLLRWGLTTPDKKHQ  
KEPFLKMGYELHPDKWTVQPIVLPEKDSWTVNDIQKLVGKLNWASQIYPGIKVRQLCKLLRGTKALTEVI  
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VKQLTEAVQKITTESIVIWKTPKFKLPQKETWETWTEYWQATWIPEWEFVNTPPLVKLWYQLEKEPIV  
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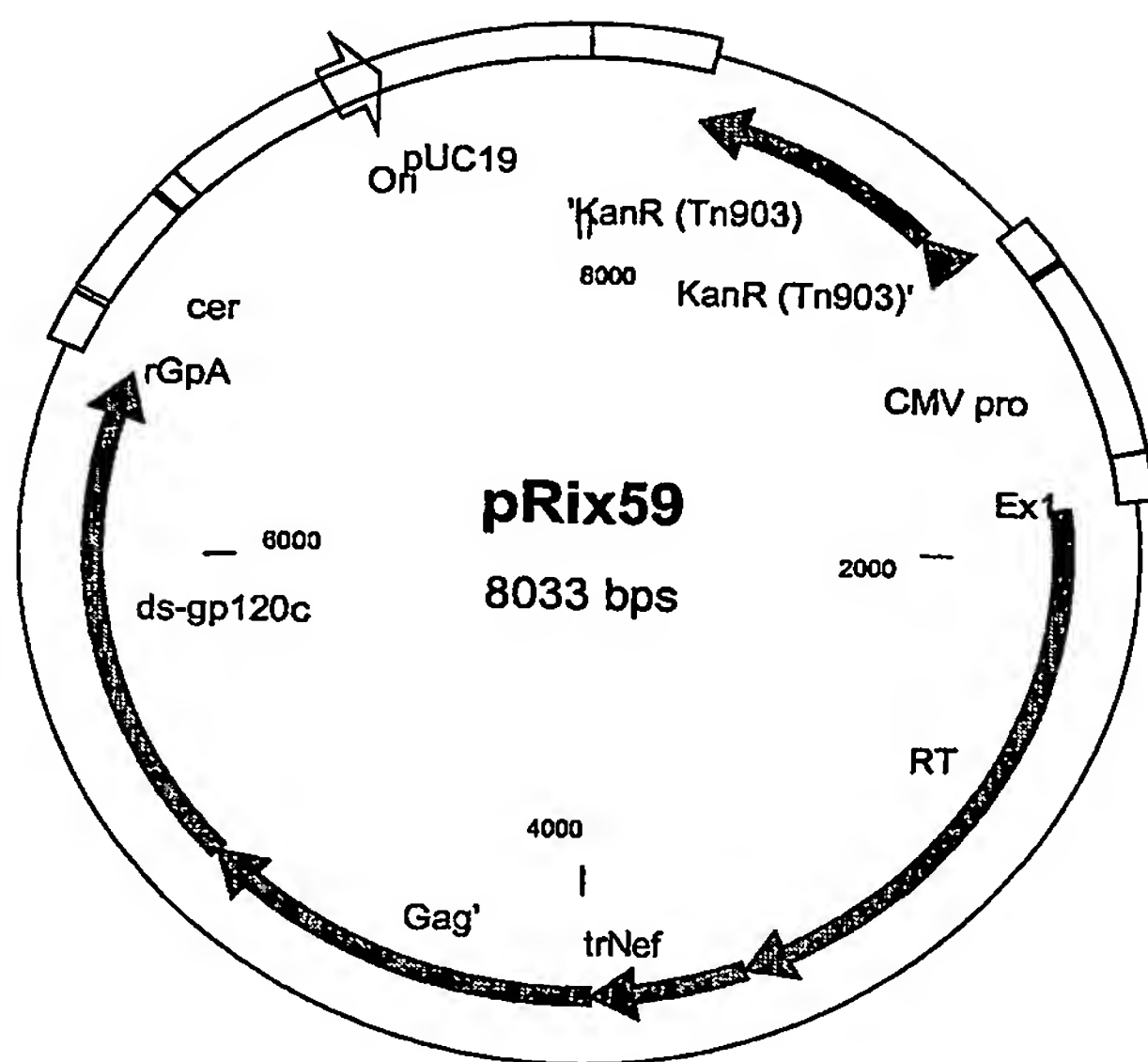


**Figure 21 continued**

QAQPDQSESELVNQIIEQLIKKEKVYLAWVPAHKGIGGNEQVDKLVSAGIRKVL MVGFPVTPQVPLRPMTY  
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VEEANKGENTSLLHPVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNCMGARASVLSGGELDRWE  
KIRLRPGGKKKYK LKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTVATLYCV  
HQRIEIKDTKEALDKIEEEQNKSKKKAQQAAADTGH SNQVSQNYPIVQNIQGQMVHQ AISPRTLNAWVKVV  
EEKAFSPEVIPMFSA LSEGATPQDLNTMLNTVGGHQAAMQMLKETINEEAAEWDRVHPVHAGPIAPGQMRE  
PRGSDIAGTTSTLQE QIGWMTNNPPIPVGEIYKRWIILGLNKIVRMYSPTSILDIRQGPKEPFRDYVDRFY  
KTLRAEQASQEVKNWMTETLLVQNANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVL [SEQ ID  
NO: 85]

**Figure 22**

pRix59



## DNA sequence of insert

ATGGGCCCCATCAGTCCCATCGAGACCGTGCCGGTGAAGCTGAAACCCGGGATGGACGGCCCCAAGGTCAA  
 GCAGTGGCCACTCACCGAGGAGAAGATCAAGGCCCTGGTGGAGATCTGCACCGAGATGGAGAAAGAGGGCA  
 AGATCAGCAAGATCGGGCCGGAGAACCACATACAACACCCCCGTGTTTGCCATCAAGAAGAAGGACAGCACC  
 AAGTGGCGCAAGCTGGTGGATTTCGGGAGCTGAATAAGCGGACCCAGGATTTCTGGGAGGTCCAGCTGGG  
 CATCCCCATCCGGCCGGCCTGAAGAAGAAGAAGAGCGTGACCGTGCTGGACGTGGGCGACGCTTACTTCA  
 GCGTCCCTCTGGACGAGGACTTTAGAAAGTACACCGCCTTTACCATCCCATCTATCAACAACGAGACCCCT  
 GGCATCAGATATCAGTACAACGTCCTCCCCCAGGGCTGGAAGGGCTCTCCCGCCATTTTCCAGAGCTCCAT  
 GACCAAGATCCTGGAGCCGTTTCGGAAGCAGAACCCCGATATCGTCATCTACCAGTACATGGACGACCTGT  
 ACGTGGGCTCTGACCTGGAAATCGGGCAGCATCGCACGAAGATTGAGGAGCTGAGGCAGCATCTGCTGAGA  
 TGGGGCCTGACCACTCCGGACAAGAAGCATCAGAAGGAGCCGCCATTCCTGAAGATGGGCTACGAGCTCCA  
 TCCCGACAAGTGGACCGTGCAGCCTATCGTCCTCCCCGAGAAGGACAGCTGGACCGTGAACGACATCCAGA  
 AGCTGGTGGGCAAGCTCAACTGGGCTAGCCAGATCTATCCCGGGATCAAGGTGCGCCAGCTCTGCAAGCTG  
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 CTGTGGTACCAGCTCGAGAAGGAGCCCATCGTGGGCGCGGAGACATTCTACGTGGACGGCGCGGCCAACC  
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 GTGACGGACAGCCAGTACGCGCTGGGCATTATTCAAGGCCAGCCGGACAGTCCGAGAGCGAACTGGTGAA  
 CCAGATTATCGAGCAGCTGATCAAGAAAGAGAAGGTCTACCTCGCCTGGGTCCCGGCCCATAGGGGCATTG  
 GCGGCAACGAGCAGGTGACAAGCTGGTGAAGTGGGGGATTAGAAAGGTGCTGATGGTGGGTTTTCCAGTC  
 ACACCTCAGGTACCTTTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTAAAGAAAA  
 GGGGGGACTGGAAGGGCTAATTCACCTCCCAAAGAAGACAAGATATCCTTGATCTGTGGATCTACCACACAC  
 AAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCCAGGGGTGAGATATCCACTGACCTTTGGATGG  
 TGCTACAAGCTAGTACCAGTTGAGCCAGATAAGGTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGTT  
 ACACCCTGTGAGCCTGCATGGGATGGATGACCCGGAGAGAGAAGTGTAGAGTGGAGGTTTGACAGCCGCC

Figure 22 continued

TAGCATTTTCATCACGTGGCCCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCATGGGTGCCCCGAGCTTCG  
 GTACTGTCTGGTGGAGAGCTGGACAGATGGGAGAAAATTAGGCTGCGCCCCGGGAGGCAAAAAGAAATACAA  
 GCTCAAGCATATCGTGTGGGCCTCGAGGGAGCTTGAACGGTTTGCCGTGAACCCAGGCCTGCTGGAAACAT  
 CTGAGGGATGTGCGCCAGATCCTGGGGCAATTGCAGCCATCCCTCCAGACCGGGAGTGAAGAGCTGAGGTCC  
 TTGTATAACACAGTGGCTACCCCTCTACTGCGTACACCAGAGGATCGAGATTAAGGATACCAAGGAGGCCTT  
 GGACAAAATTGAGGAGGAGCAAAACAAGAGCAAGAAGAAGGCCAGCAGGCAGCTGCTGACACTGGGCATA  
 GCAACCAGGTATCACAGAACTATCCTATTGTCCAAAACATTTCAGGGCCAGATGGTTTCATCAGGCCATCAGC  
 CCCCCGACGCTCAATGCCTGGGTGAAGGTTGTCTGAAGAGAAGGCCTTTTCTCCTGAGGTTATCCCCATGTT  
 CTCCGCTTTGAGTGAGGGGGCCACTCCTCAGGACCTCAATACAATGCTTAATACCGTGGGCGGCCATCAGG  
 CCGCCATGCAAATGTTGAAGGAGACTATCAACGAGGAGGCAGCCGAGTGGGACAGAGTGCATCCCGTCCAC  
 GCTGGCCCCAATCGCGCCCCGACAGATGCGGGAGCCTCGCGGCTCTGACATTGCCGGCACCACCTCTACACT  
 GCAAGAGCAAATCGGATGGATGACCAACAATCCTCCCATCCCAGTTGGAGAAATCTATAAACGGTGGATCA  
 TCCTGGGCCTGAACAAGATCGTGCGCATGTACTCTCCGACATCCATCCTTGACATTAGACAGGGACCCAAA  
 GAGCCTTTTAGGGATTACGTGACCGGTTTTATAAGACCCTGCGAGCAGAGCAGGCCTCTCAGGAGGTCAA  
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 GCCCGGCTGCCACCCTGGAAGAGATGATGACCGCCTGTCAGGGAGTAGGCGGACCCGGACACAAAGCCAGA  
 GTGTTGATGGCCGAGCAGCTGTGGGTACCCGTCTACTACGGCGTGCCTGTGTGGAAGGAGGCCACGACCAC  
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 GCTGGACCGGAGAGATTTCGAAGGGCGAGATCAAGAAGTCTCCTTCAATATCACGACCTCGATCAGAGAC  
 AAGGTGCAGAAGGAATACGCGCTGTTTTATAATCTCGATGTGGTCCCCATCGACGACGACAATGCCACCAC  
 CAAGAACAAGACGACGCGTAATTTAGACTCATTCACTGCAACAGCAGCGTCATGACGCAGGCCTGCCCCA  
 AGGTGTCTTTCGAACCAATCCCGATCCATTACTGTGCCCCCTGCCGGATTTCGCGATCCTCAAGTGTAACAAC  
 AAGACCTTCGACGGGAAGGGCCTGTGCACCAACGTGACGACGGTGCAGTGCACCCATGGCATCCGCCCCGT  
 CGTGAGCACCCAGCTGCTGCTGAACGGGTCCCTGGCTGAGGAGGAGGTGGTGTGATCCGGTCCGACAACCTTCA  
 TGGACAACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGTGGCGATTAACTGTACCCGGCCTAACAAAC  
 AACACCCGTAAAGGCATCCACATCGGGCCTGGACGGGCCTTCTATGCCGCCCCGCAAGATCATCGGCGACAT  
 CCGGCAGGCCCATTGCAACCTCTCCCGCGCCAGTGGAATAACACCCTGAAGCAGATCGTGATCAAGCTGA  
 GAGAGCACTTTGGAACAAGACCATCAAGTTCAATCAGAGTTCTGGCGGAGACCCCGAGATCGTGCGGCAC  
 TCCTTCAACTGCGGGGGCGAGTTCTTCTACTGCGATACGACACAGCTCTTCAACTCCACCTGGAACGGCAC  
 CGAGGGCAACAACACAGAGGGGAACTCCACTATCACCTCCCTTGCCGCATCAAGCAGATCATCAACATGT  
 GGCAGGAGGTGGGAAAGGCCATGTATGCCCCCCCCATCGGGGGCCAGATCCGCTGCTCCTCCAACATCACC  
 GGCTGTCTGCTCACCAGAGACGGGGGCACCGAGGGCAACGGCACGGAGAACGAGACGGAGATCTTCAGGCC  
 CGGCGGCGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTGGAGCCGC  
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## Aminoacid sequence of insert

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 KWRKLVDLFRELNKRQTQDFWEVQLGIPHPAGLKKKKSVTVLVDVGDAYFSVPLDEDFRKYTAFTIPSINNETP  
 GIRYQYNVLPQGWKGSPAIFQSSMTKILEPFRKQNPDIVIYQYMDDLTVGSDLEIGQHRTKIEELRQHLLR  
 WGLTTPDKKHQKEPPFLKMGYELHPDKWTVQPIVLPEKDSWTVNDIQKLVGKLNWASQIYPGIKVRQLCKL  
 LRGTALTEVIPLEEAELELAENREILKEPVHGVYYDPSKDLIAEIQKQGQGWTYQIYQEPFKNLKTGK  
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 LWYQLEKEPIVGAETFYVDGAANRETKLGKAGYVTNRGRQKVVTLTDTTNQKTELQAIYLALQDSGLEVNI  
 VTDSQYALGIIQAQPDQSESELVNQIIIEQLIKKEKVYLAWVPAHKGIGGNEQVDKLVSAIRKVLVGVFPV  
 TPQVPLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDWLYHTQGYFPDWQNYTPGPGVRYPLTFGW  
 CYKLVPVEPDKVEEANKGENTSLHPVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNCMGARAS  
 VLSGGELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLTSEGCRQILGQLQPSLQTGSEELRS  
 LYNTVATLYCVHQRIEIKDTKEALDKIEEEQNKSKKKAQQAADTGHSNQVSQNYPIVQNIQGQMVHQAI  
 PRTLNAWVKVVEEKAFSPFVIMFSALSEGATPQDLNTMLNTVGGHQAAMQMLKETINEEAAEWDRVHPVH  
 AGPIAPGQMREPRGSDIAGTTSTLQEQIGWMTNPNPIPVGEIYKRWIILGLNKIVRMYSPTSILDIRQGP  
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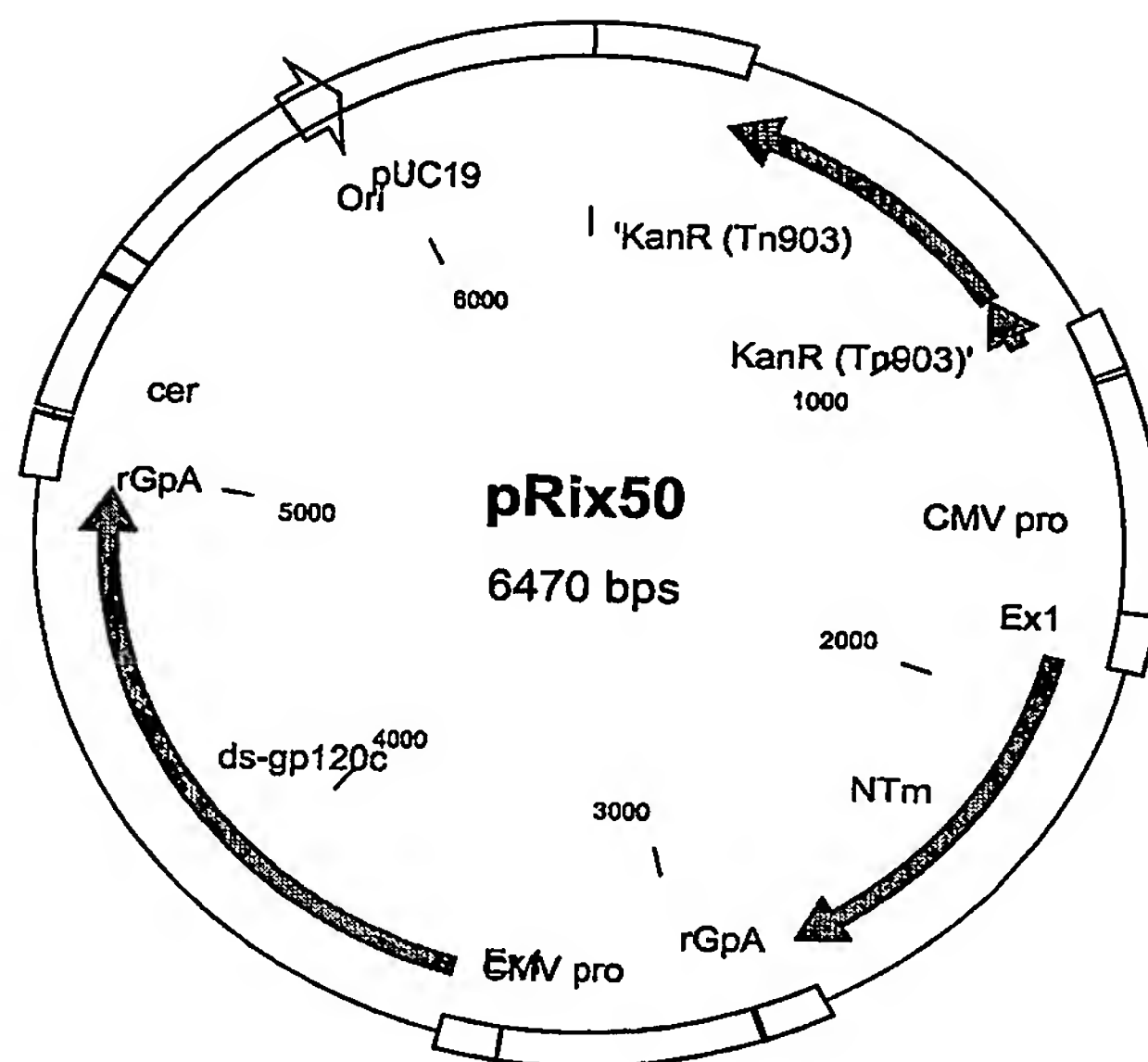
**Figure 22 continued**

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KVQKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPKVSFEPPIPIHYCAPAGFAILKCNN  
KTFDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAEEEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNN  
NTRKGIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRH  
SFNCGGEFFYCDTTQLFNSTWNGTEGNNTTEGNSTITLPCRIKQIINMWQEVGKAMYAPPIGGQIRCSSNIT  
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NO: 87]



**Figure 23**

pRix50

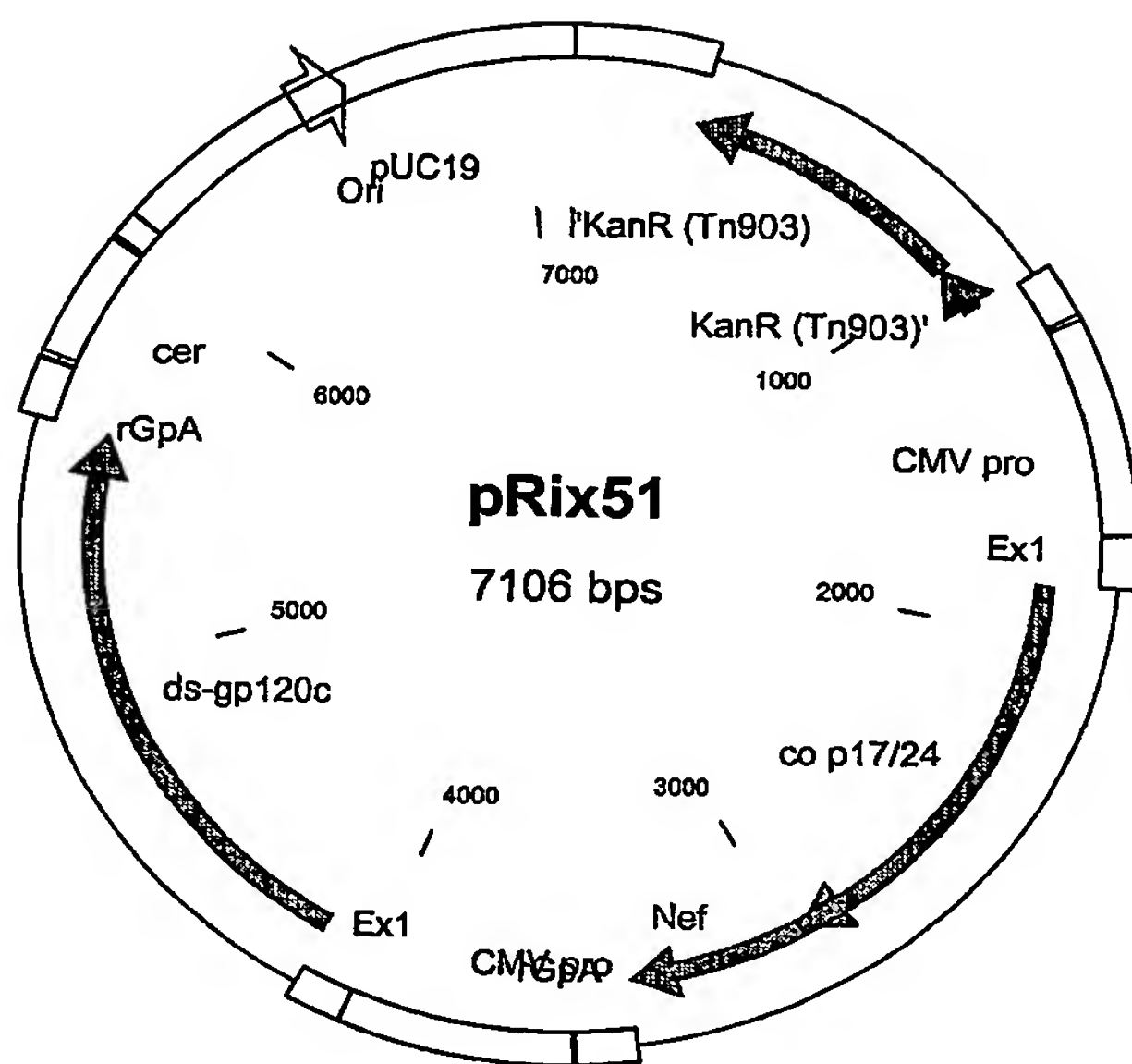


DNA and amino acid sequences of inserts:

Identical to pNTm and pRix12

**Figure 24**

pRix51

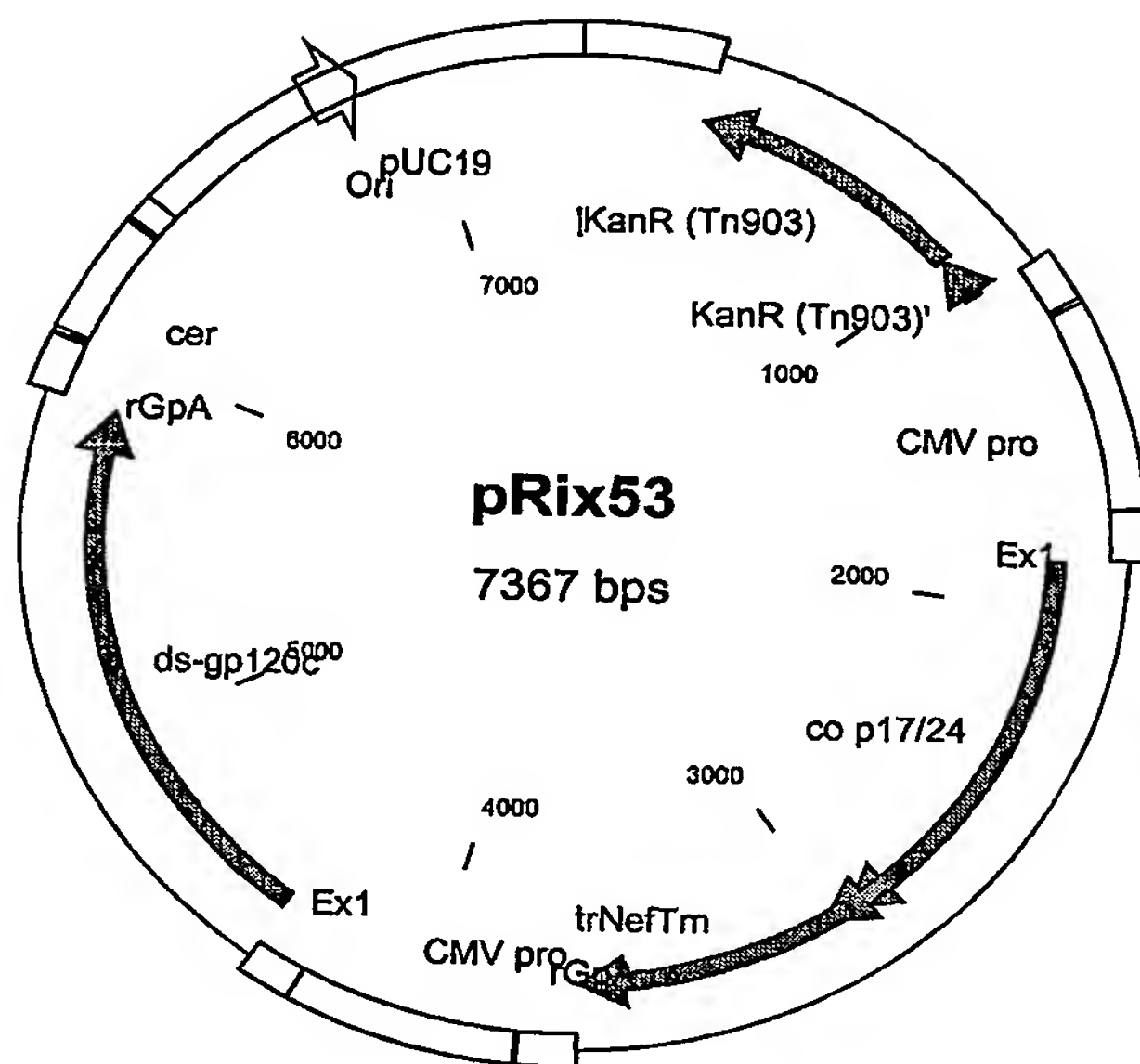


DNA and amino acid sequences of inserts:

Identical to p73I-GN2 and pRix12

**Figure 25**

pRix53

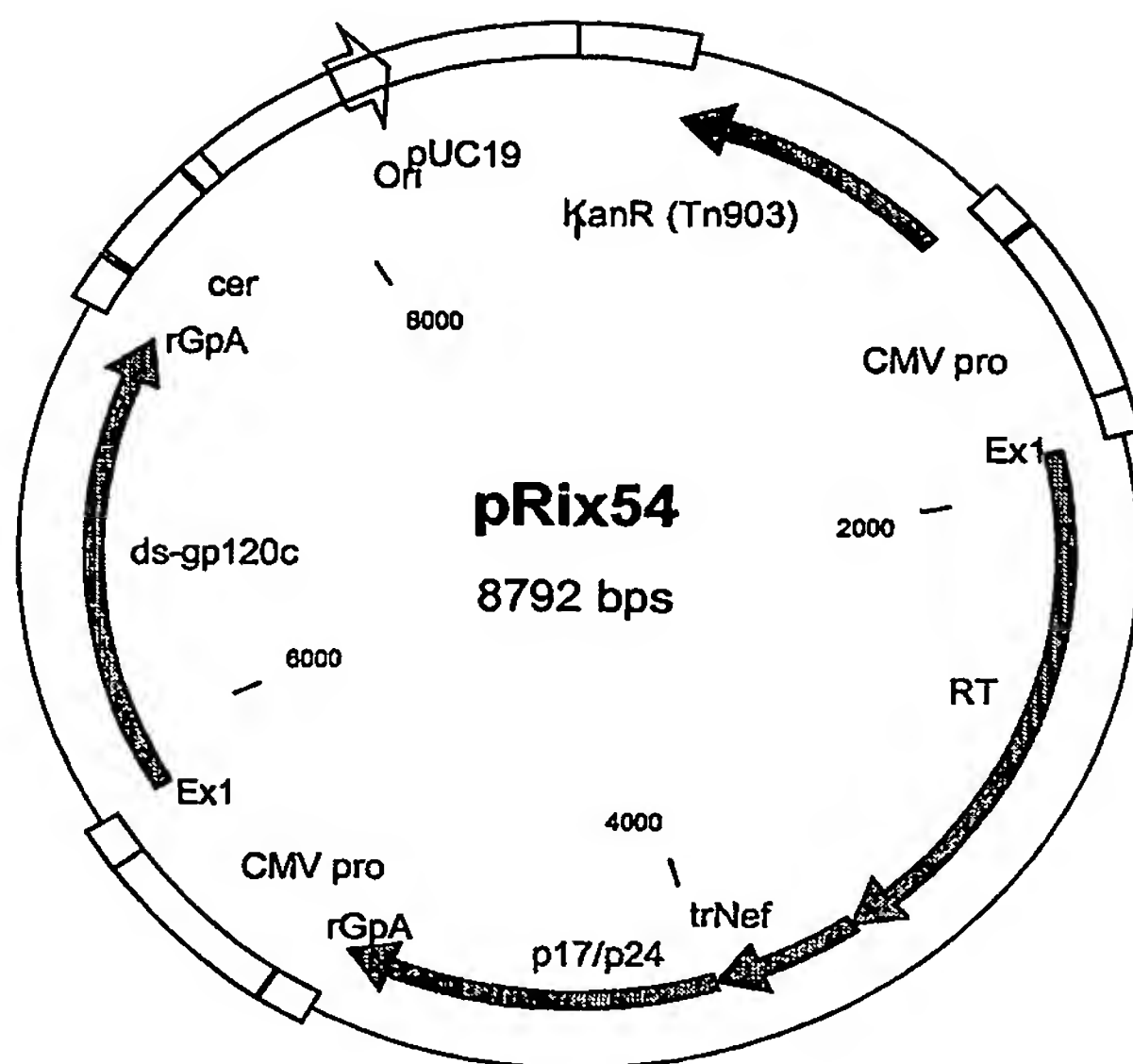


DNA and amino acid sequences of inserts:

Identical to pRix52 and pRix12

**Figure 26**

pRix54



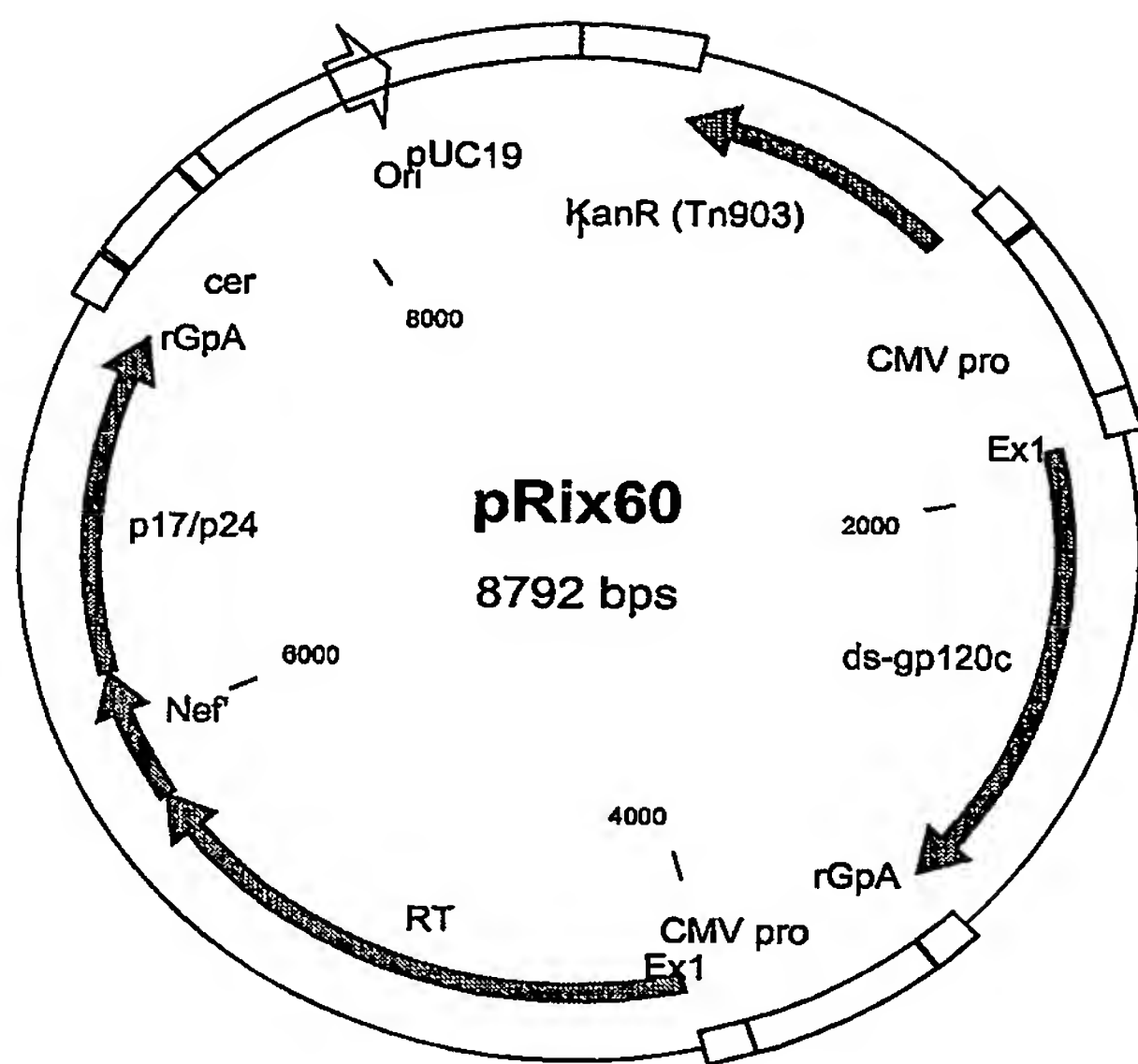
DNA and amino acid sequences of inserts:

Identical to pT-RNG and pRix12



**Figure 27**

pRix60

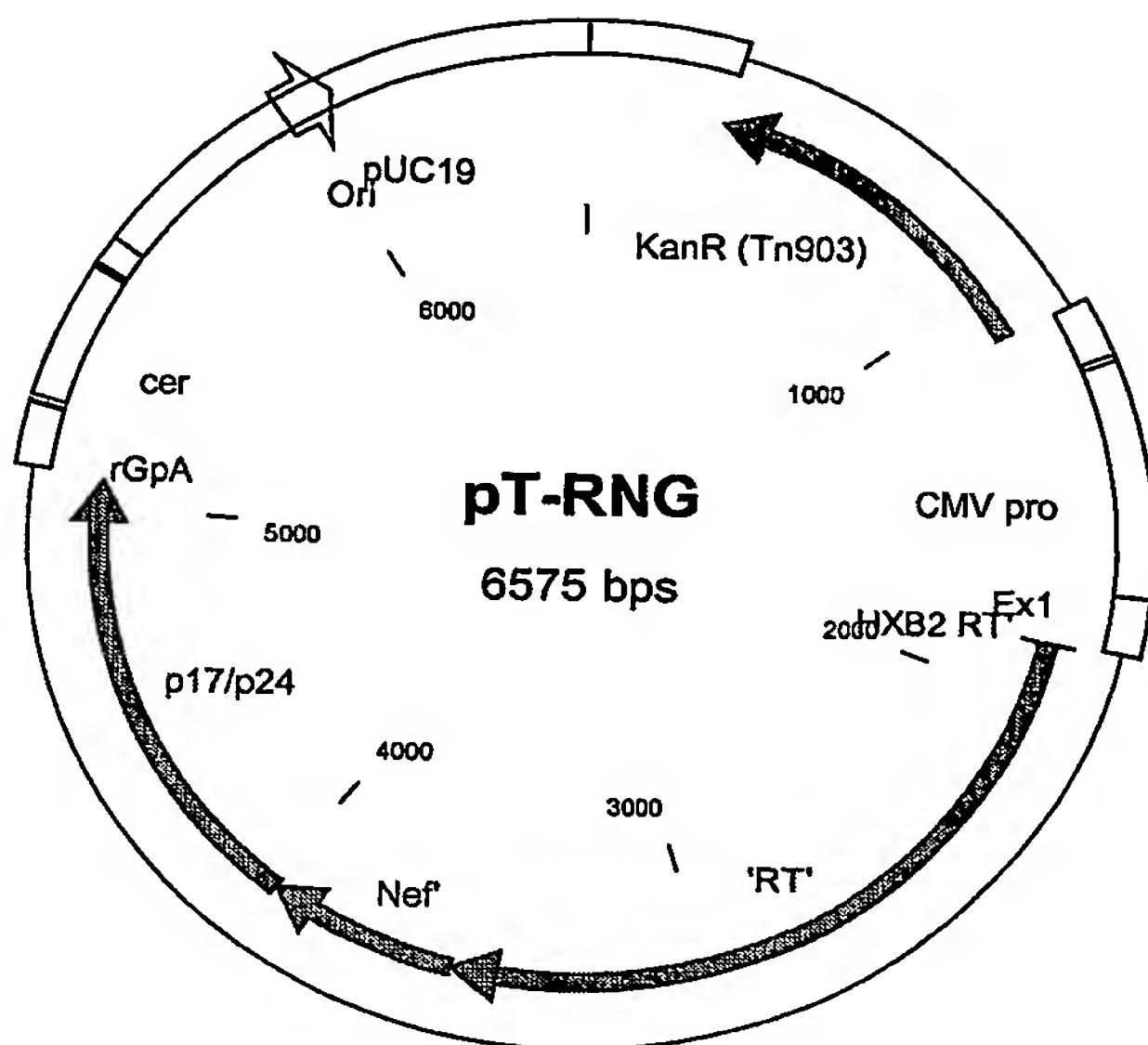


DNA and amino acid sequences of inserts:

Identical to pRix12 and pT-rng

**Figure 28**

pT-RNG



DNA sequence of insert:

```

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AGATCAGCAAGATCGGGCCTGAGAACCATAACAACCCCCGTGTTTGCCATCAAGAAGAAGGACAGCACC
AAGTGGCGCAAGCTGGTGGATTTCGGGGAGCTGAATAAGCGGACCCAGGATTTCTGGGAGGTCCAGCTGGG
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CGAGTCCATCGTGATCTGGGGGAAGACACCCAAGTTCAAGCTGCCTATCCAGAAGGAGACCTGGGAGACGT
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GCGGCAACGAGCAGGTGACAAAGCTGGTGAAGTGCGGGGATTAGAAAGGTGCTGATGGTGGGTTTTCCAGTC
ACACCTCAGGTACCTTTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTTTAAAGAAAA
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AAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCCAGGGGTGAGATATCCACTGACCTTTGGATGG
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**Figure 28 continued**

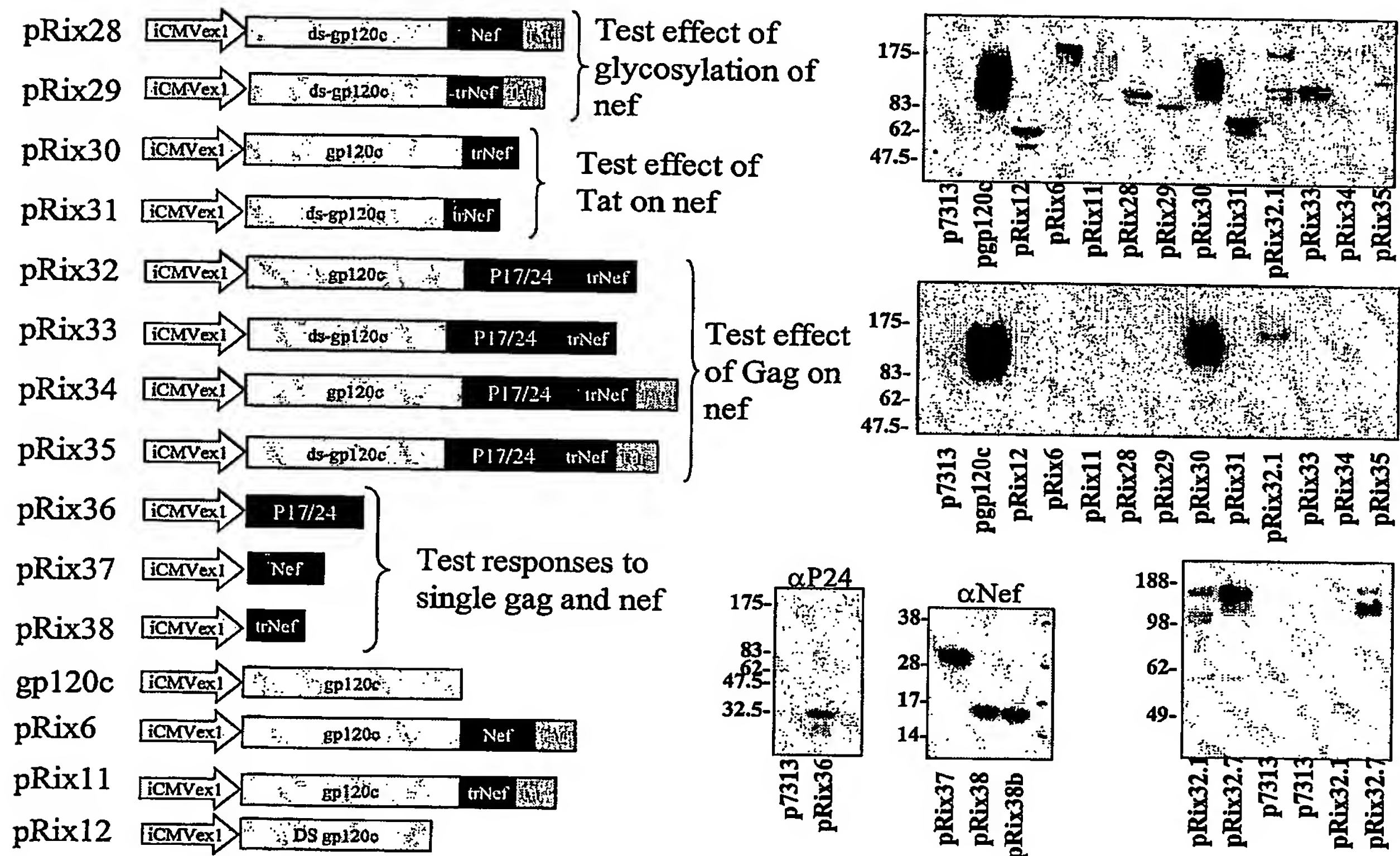
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 TCCTGGGCCTGAACAAGATCGTGCATGTACTCTCCGACATCCATCCTTGACATTAGACAGGGACCCAAA  
 GAGCCTTTTAGGGATTACGTCGACCGGTTTTATAAGACCCTGCGAGCAGAGCAGGCCTCTCAGGAGGTCAA  
 AAATGGATGACGGAGACACTCCTGGTACAGAACGCTAACCCCGACTGCAAAACAATCTTGAAGGCACTAG  
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 GTGTTGTAA [SEQ ID NO: 88]

**Amino acid sequence of insert:**

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 GIRYQYNVLPQGWKGSIPAIFQSSMTKILEPFRKQNPDIVIYQYMDDLIVGSDLEIGQHRTKIEELRQHLLR  
 WGLTTPDKKHQKEPPFLKMGYELHPDKWTVQPIVLPEKDSWTVNDIQKLVGKLNWASQIYPGIKVRQLCKL  
 LRGTALTEVIPLTEEALELAENREILKEPVHGVYDPSKDLIAEIQKQGQGWTYQIYQEPFKNLKTGK  
 YARMRGAHTNDVKQLTEAVQKITTESIVIWGKTPKFKLPIQKETWETWWTEYWQATWIPEWEFVNTPLVK  
 LWYQLEKEPIVGAETFYVDGAANRETKLGKAGYVTNRGRQKVVTLTDTTNQKTELQAIYLALQDSGLEVNI  
 VTDSQYALGIIQAQPDQSESELVNQIIIEQLIKKEKVYLAWVPAHKGIGGNEQVDKLVSAGIRKVLVGVFPV  
 TPQVPLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDWYHTQGYFPDWQNYTPGPGVRYPLTFGW  
 CYKLVPVEPDKVEEANKGENTSLLHPVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNCMGARAS  
 VLSGGELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLTSEGCRQILGQLQPSLQTGSEELRS  
 LYNTVATLYCVHQRIEIKDTKEALDKIEEQNKSKKKAQQAADTGHSNQVSQNYPIVQNIQGQMVHQAI  
 PRTLNAWVKVVEEKAFSPEVIPMFSALSEGATPQDLNTMLNTVGGHQAAMQMLKETINEEAAEWDRVHPVH  
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**Figure 29**

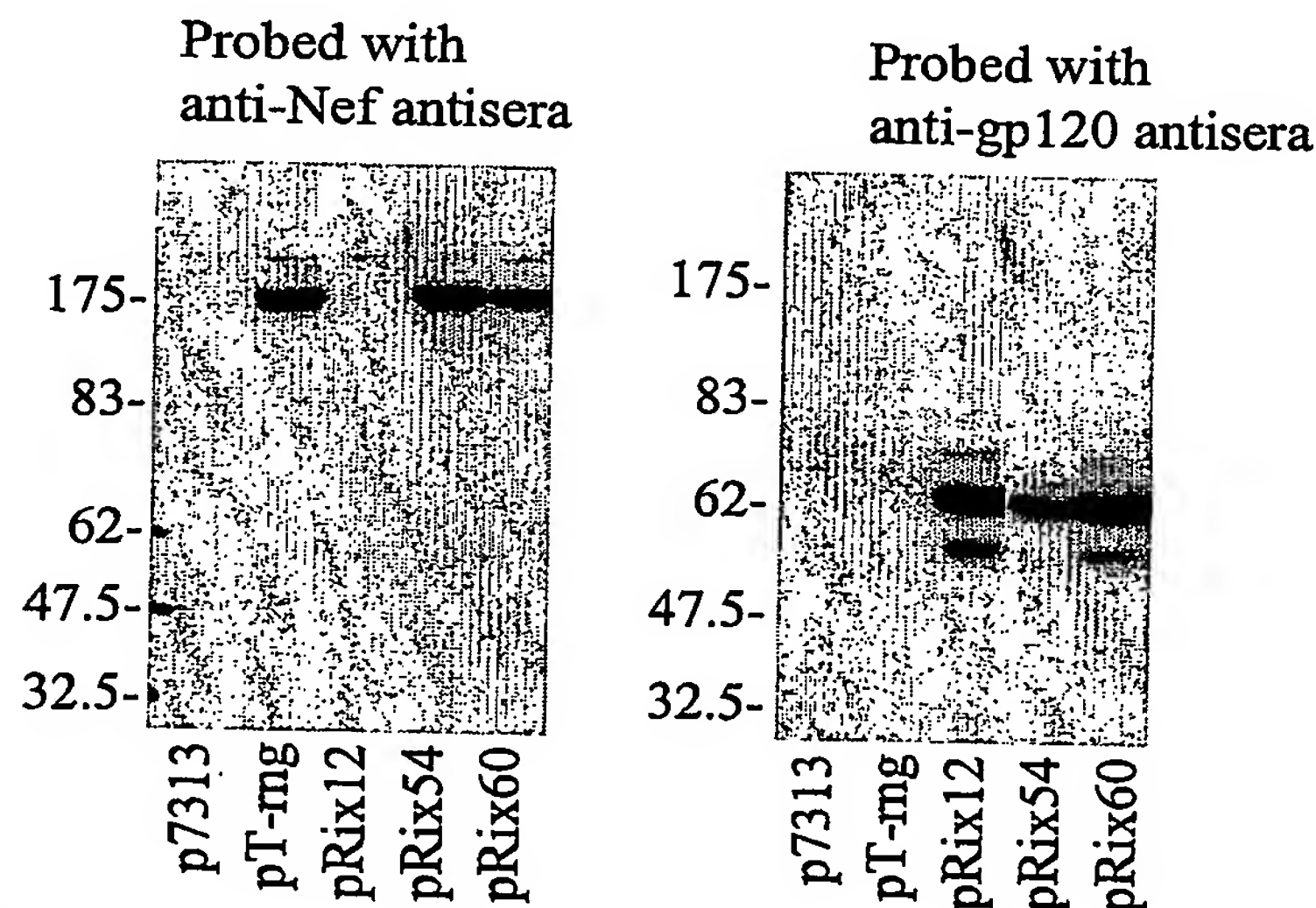
A schematic representation of the constructs and associated expression data is shown below





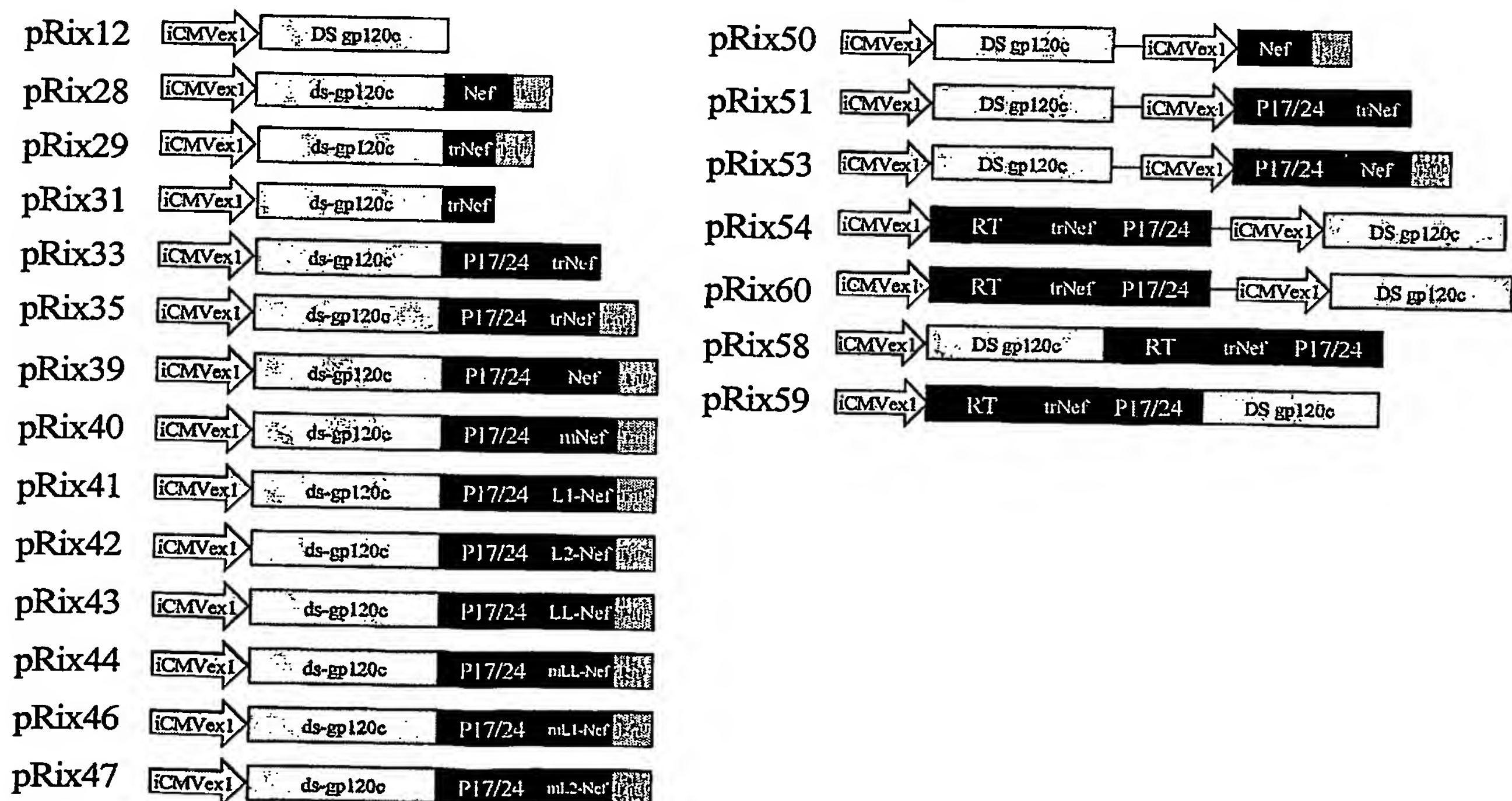
**Figure 30**

A schematic representation of further constructs and associated expression data:



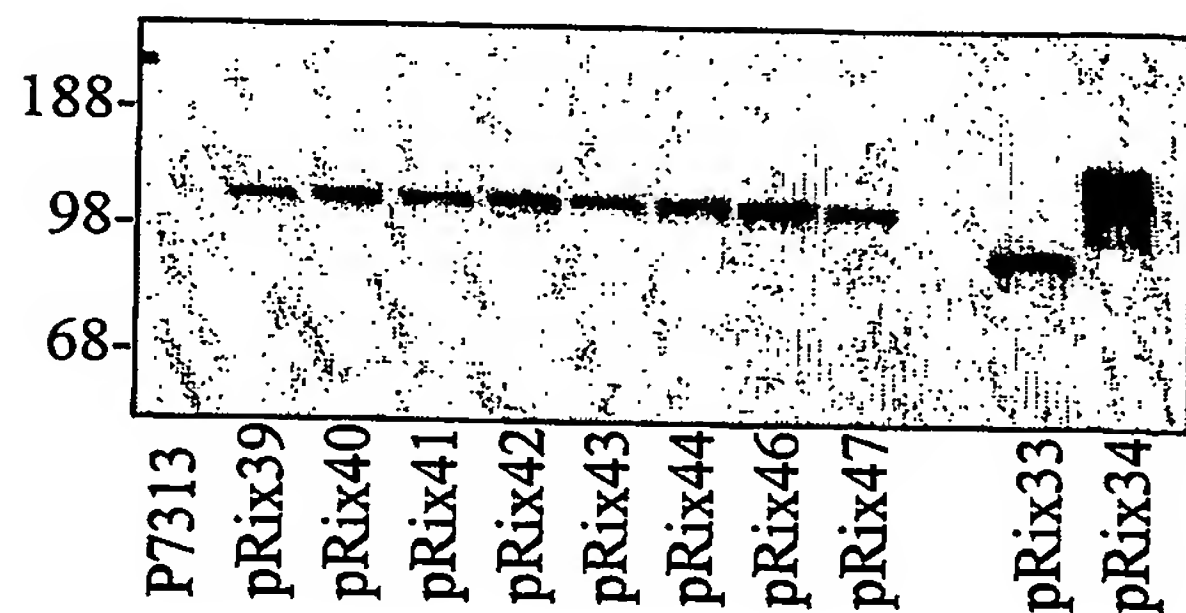
Western blots probed with anti-nef (left) or anti-gp120 (right) antisera showing the expression of RNG and dsgp120 from dual promoter and single vectors.

Plasmid schematics:

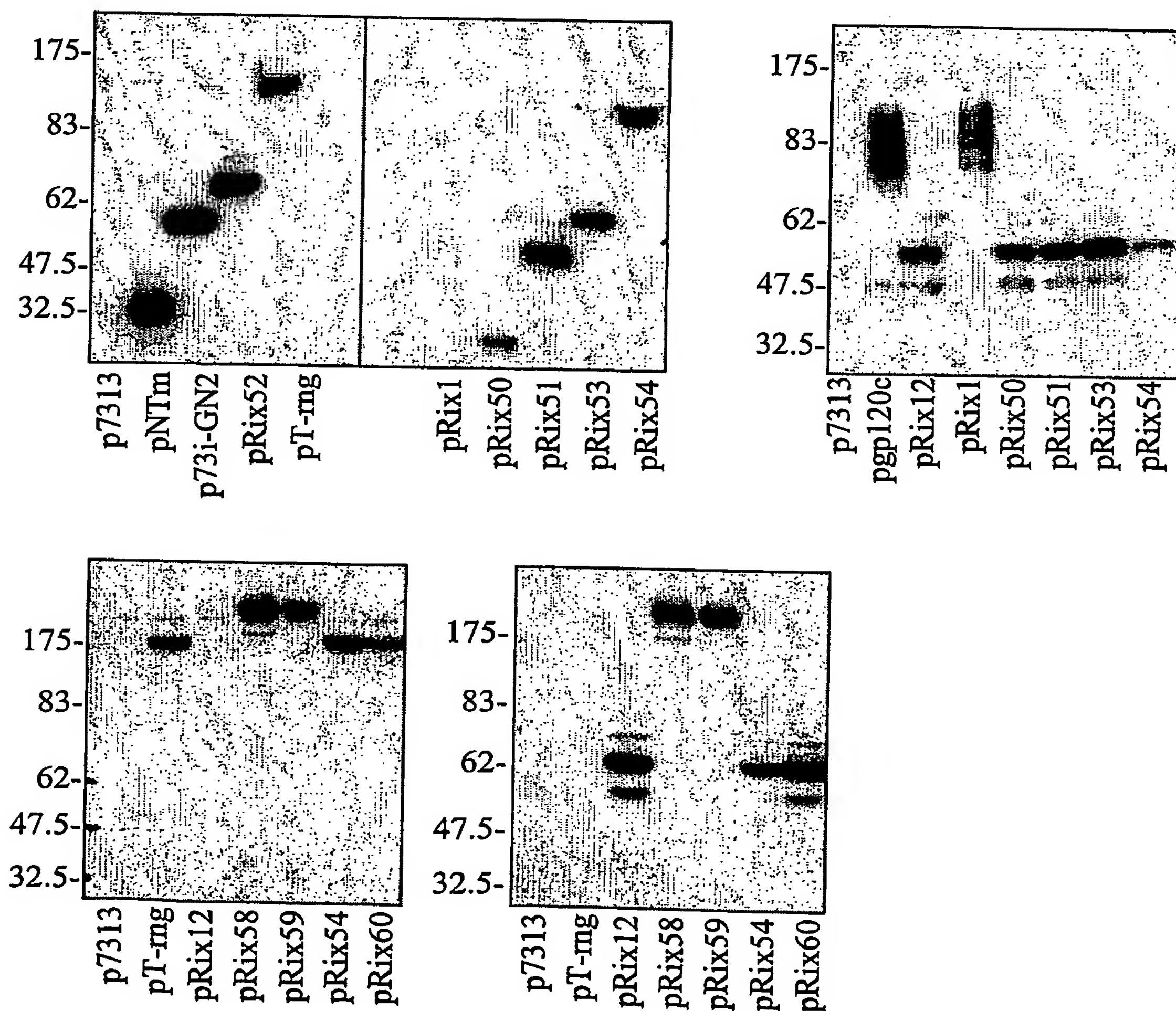


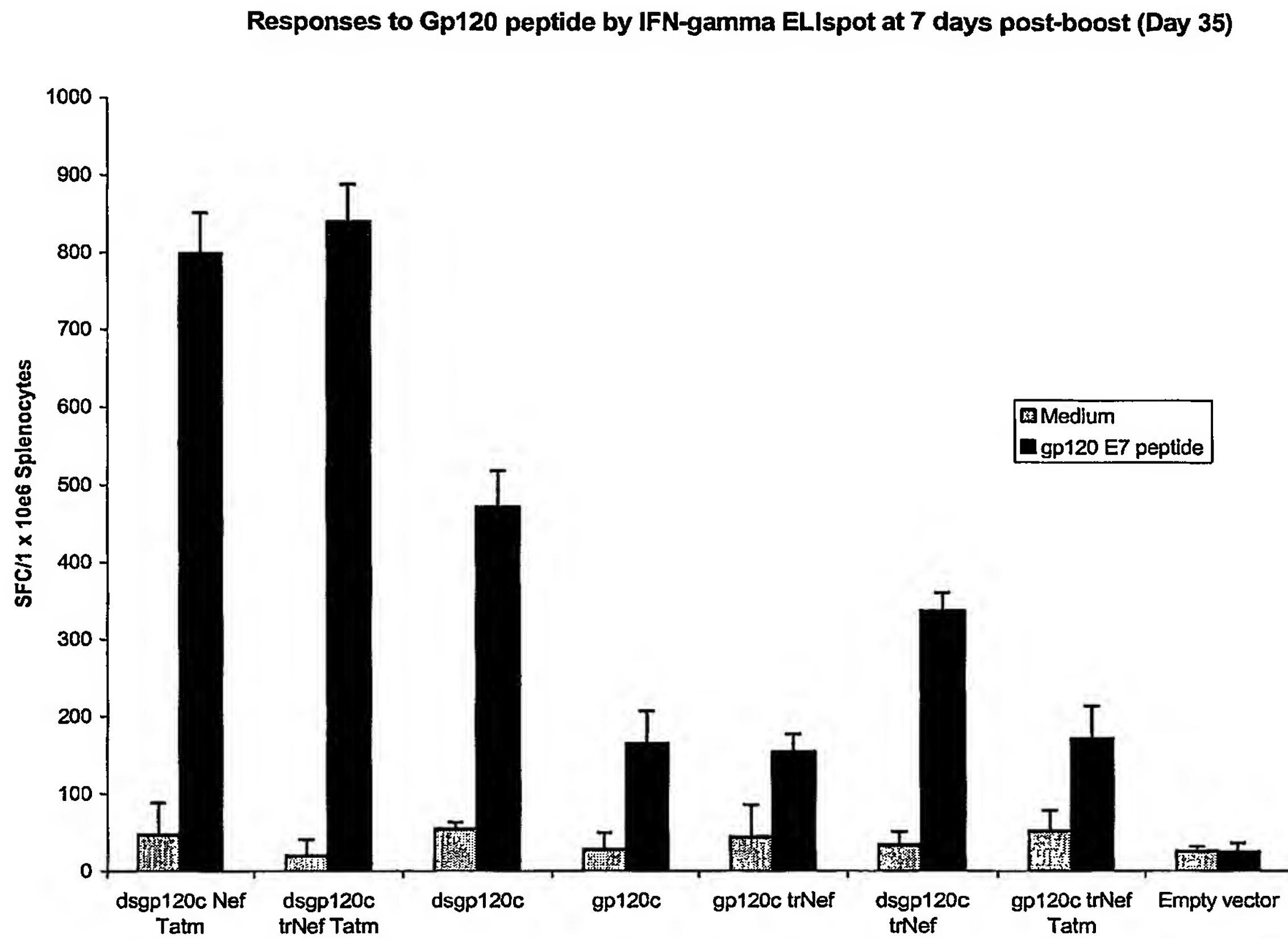
**Figure 31**

Expression data (anti-Nef) for dsgrp120/Gag/Nef/Tat fusions with mutations in Nef (pRix 40-47)



Expression data (anti-Nef and anti-gp120) for dual promoter vectors



**Figure 32**

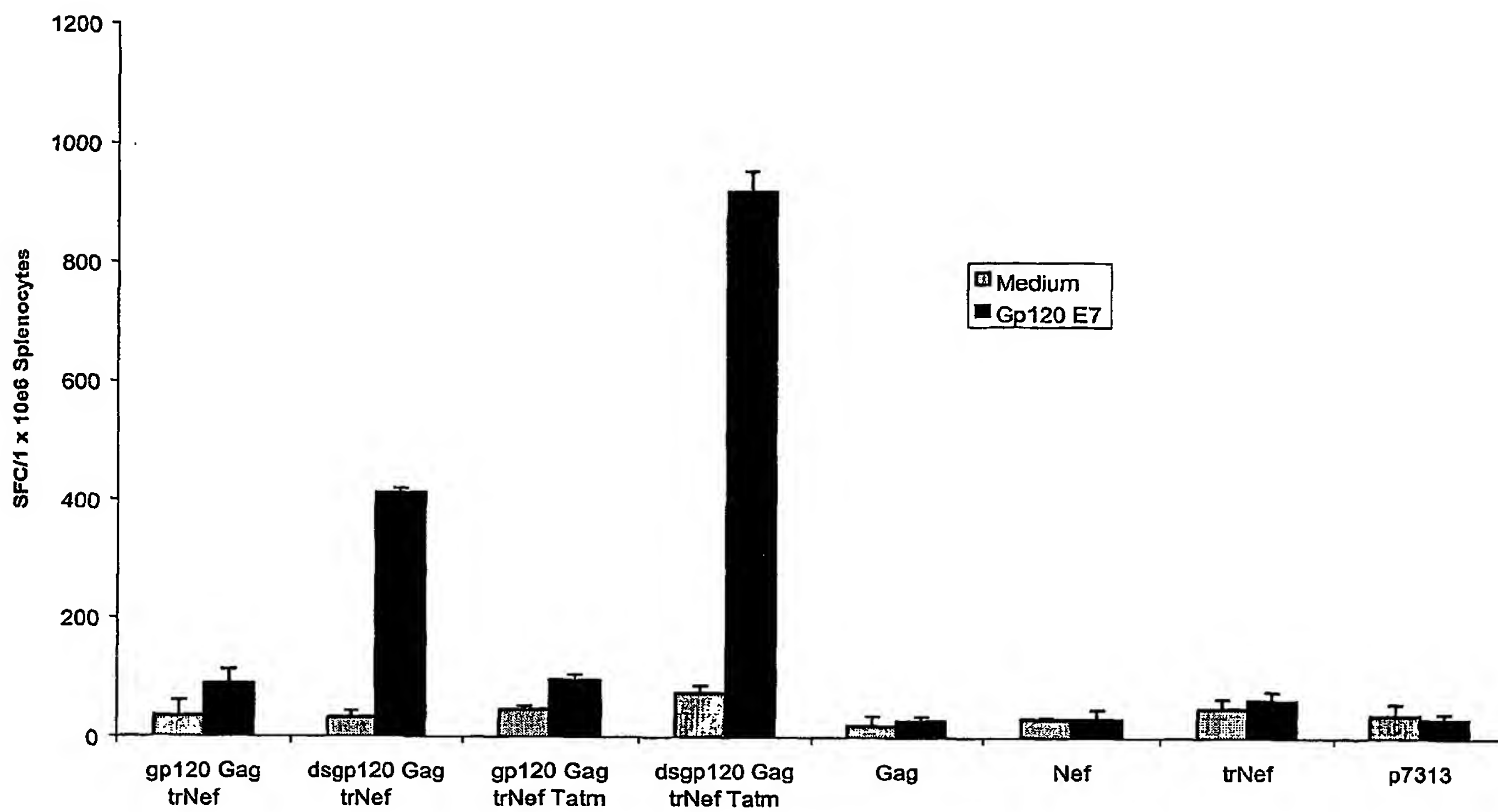
**Figure 33****Responses to gp120 peptide by IFN-gamma ELISpot at 7 days post-boost (Day 35)**



Figure 34

Response to in vitro restimulation with Gp120, Gag and RT peptides at 7 days post-boost (Day 35)  
using IFN-gamma ELISPOT

